The Work Group convened telephonically at 10:00 a.m., Eastern Time, Phillip Schofield, Chair, presiding.

PRESENT:

PHILLIP SCHOFIELD, Chair
JOSIE BEACH, Member
JAMES M. MELIUS, Member
ALSO PRESENT:

TED KATZ, Designated Federal Official
BOB BARTON, SC&A
RON BUCHANAN, SC&A
HARRY CHMELYNSKI, SC&A
DOUG FARVER, SC&A
MITCH FINDLEY, ORAU Team
JOE FITZGERALD, SC&A
BRIAN GLECKLER, ORAU Team
JOHN MAURO, SC&A
JIM NETON, DCAS
STEVE OSTROW, SC&A
MICHAEL RAFKY, HHS
JOHN STIVER, SC&A
TIM TAULBEE, SC&A
Contents
Welcome and Roll Call............................. 4
V&V plan for temporary badges at CPP.............. 6
NIOSH Priorities for August ABRWH............... 49
83.14 re: Burial Grounds.......................... 49
Priorities for Evaluating Reactor................... 67
DR Records/Methods.............................. 67
SC&A Burial Grounds Report........................ 114
Adjourn......................................... 129
Welcome and Roll Call

MR. KATZ: So, for folks on the phone and the public or elsewhere the material for today's meeting, the agenda and the materials are on the NIOSH website, this program's website, under schedule of meetings, today's date.

You can pull up all of the documents that are going to be discussed or may be discussed today because this meeting has more on its agenda than we probably have time for.

But we have all those documents on there. The only thing that's not on there is the presentation that was prepared by Steve Ostrow, just really sort of a summary of other documents and discussions. And most of that material is covered in the documents that are posted.

But we will get that posted when we can; it couldn't be posted in time for this meeting.
Okay, so roll call. Conflicts of interest. None of my Work Group members have conflicts so I don't need to address that, but we have Phillip up here, he's the chair of this Work Group on the line.

(Roll Call)

MR. KATZ: I just realized, I didn't announce at the outset here. This is the INL/ANL-West Work Group meeting.

Okay, very good. Let's go to the SC&A team.

(Roll Call)

MR. KATZ: Okay, then. I just remind everyone to mute your phone except for when you're speaking. It will help with the audio. And Phil, it's your meeting.

CHAIR SCHOFIELD: Thank you. I guess we'll go ahead and start off with SC&A. We're going to follow the agenda that's out on the website. So, if anybody has any questions they can go to the CDC website and find the agenda.
there.

So, SC&A I guess it's yours now.

V&V plan for temporary badges at CPP

MR. BARTON: I guess that's my cue. The first discussion item on the agenda is the V&V plan for temporary badges at CPP.

If you could just -- I'm trying to fight with Skype. I wanted to put up the memo just so people could try to take a look at a table that's shown in there so if you could bear with me one moment.

You know what? I can get started. The document is on the website under today's meeting as Ted had pointed out.

MR. KATZ: And Bob, everyone has it so it should be okay.

MR. BARTON: If people want to just follow along in that that's fine.

And this memo came out last September.

And this was related to a lot of discussions that happened in both March, or January, March,
and August of last year in this Work Group.

And there's sort of two facets to it.

So just to give everyone a little bit of background so we can kind of get up to speed because it's been a few months.

There were sort of two like I said facets to this to doing a V&V study on the temporary badge issue.

If you all remember what we discovered early in 2016, was that at some point during the mid to late nineteen sixties the policy at INL was they would issue a visitor badge. But if it came back as a zero dose for that wear period and you were not already in the health physics system they kept your badge but you weren't actually assimilated into these temporary badge reports with all the other workers, who were mainly the prime contractors aren't the same. So a lot of these are the I guess sub subcontractors you'd see. And if they had zero dose they weren't actually entered in INL's system for the purposes
of being able to identify the people when it came
to requests for their monitoring records.

So even though those records weren't destroyed or misplaced or anything like that they just simply hadn't been, what's referred to as indexed or coded so that when a request comes in for a specific worker those badges weren't recognized as being associated with that worker.

Now that problem was recognized and DOE has undergone, and I'm not sure where that stands right now. I don't know if Tim, you want to give an update on that coding effort.

I think maybe it was still underway.

DR. Taulbee: Yes, this is Tim Taulbee.

Back in April, Mitch and I talked with the site about their status and it is progressing.

However, they are slightly delayed due to some resource issues. At that time -- this was about a month ago -- they were expecting to
be completed in mid-June.

MR. BARTON: Okay, great. So, anyway, like I said there are sort of two things that we really want to look at here.

One is do we physically have access to all of those visitor cards and temporary badges, or we're not missing whole groups of them which would obviously be a very large completeness issue.

Now that aspect of it was analyzed in depth and presented to the Work Group mostly in August but also in March of last year.

And in that analysis, I believe, in August it was -- essentially what we did, or what NIOSH went in and did is they counted physically how many of these temporary badges do we have in hand.

And then you can compare those to health physics reports which report out the number of temporary/visitor badges that were issued for a given period.
I think, again, I don't want to talk too much about the work NIOSH did, but they looked at it on an essentially year by year basis.

And the end game was that they actually had, I believe about 2 percent more badges, physical badges in hand than what was actually being reported in those health physics reports.

So that's a pretty good weight of evidence argument that we're not missing whole groupings of these temporary badges. So they're there.

Now the question was, DOE is going to go in and code these badges, are they going to be in a form to where the implementation needs to be tested.

That is, we have a database now, or the database is currently underway so that when you have a claimant who's either going to qualify as the SEC or needs a dose reconstruction that
information comes in, they can identify the
claimant, and these temporary badges which had
heretofore been not associated with these workers
can now be correctly associated and those records
are transmitted both to DOL for any SEC
determination, or to NIOSH for a dose
reconstruction. So it's really that second
part that this V&V memo was about. It was
requested of SC&A to sort of come up with a
protocol or a procedure on how we could go in and
test the implementation of all this coding and
indexing to be sure that when all is said and
done we're still not going to be missing people
who were in these temporary badge records that
hadn't been officially entered into the INL
dosimetry system.

So that's sort of the background to
all this.

And we produced the memo again late
September. Not a very long document, nine pages,
but most of that is tables at the end.
So if we can look at that, I kind of went through the introduction background.

But the method we came up with is fairly simple. What we wanted to do is go find some claimants who would require dose reconstruction from NIOSH mostly because the covered illness is not one of the 22 designated SEC cancers.

So despite whatever happens with the SEC they're still going to require dose reconstruction, it's still going to be required that NIOSH make a request for records from DOE so that it can get all these temporary badge reports which had been missing.

So what we did is sort of a pool principle. We said all right, we'll go into these -- groups of visitor cards which had been captured by NIOSH and we found some pretty large files from about mid 1967 into 1969, I think early 1970.

And we looked for claimants with
specific criteria.

   One, obviously that they still require
dose reconstruction. And the reason why we made
that a requirement is because DOE would already
be searching and compiling the monitoring records
for these people anyway. So this wouldn't be
excess work on their end. It would be something
that would already be being done so that the dose
reconstruction could be revised given the new
information. So that was one requirement.

   And also one requirement that I put in
there was that I wanted to see claims that had
what's called an S number, or a security number.

   This was a unique -- it's not Social
Security. It's a unique security identification
number for the site.

   And the reason I wanted to include
that criteria was simply because you could always
run into situations where there's some ambiguity,
some uncertainty which you might have a John
Smith, but you don't know which John Smith that
So I wanted claimants that would require dose reconstruction, had an S number on these visitor cards so I could absolutely identify them for who they were, and then also the third requirement was these records that we see are not already included in the NOCTS file.

That is, these are the records that were missing, that had not been coded and indexed, and so were not being associated with the individual worker.

So as a proof of principle, and I think it's the first table there in the memo. We looked through several SRDB reference numbers and we came up with a group of 32 claimants who fit those criteria that are definitely going to require a revised dose reconstruction.

We have an S number that we can definitely tie them to these temporary badges. And the temporary badges are not currently in their file so they had been missed the first time
around. 

And the idea is once all these badges are coded and a request is made to DOE to get these files for dose reconstruction now we can see, well, these missing badges which we've identified manually, are these now getting picked up by the electronic system that's now in place. 

So that's the general idea. There were 32 claimants with 51 total badges. So some claimants we were able to identify with multiple temporary badges at CPP again during this window that we looked at. 

Really the proof of principle to say well, it would be nice if we had all these criteria and we could meet them. But in practice if we can't find claimants that we can put in this value then that wouldn't be worth a whole lot. 

So, again these 32 claimants with 51 records were part of the proof of principle to say this is the method that we feel is the best
way to test the actual implementation of this new
database of temporary badges.

Can we find them? Yes, we found some.

And this is how we propose for discussion with
the Work Group on how we feel the best way to go
about validating the implementation side of this
issue.

And of course the other side was the
total number of badges, do we have all of them,
which is something that NIOSH looked into last
August.

And I don't think there's much more to
say on the actual memo. There's a fairly lengthy
table at the end that shows those 32 claimants.
And you can see what their work history was, what
the illness was, kind of explain what their DR
status is and also how many badges we found again
in that subset of SRDB reference numbers that we
present in the first table of the memo.

So with that I'd be happy to answer
any questions or clarify any points. Hopefully
you're all still there and I didn't just speak for 10 minutes with nobody listening.

MR. KATZ: We're all here, Bob, thanks.

MR. BARTON: Okay.

MEMBER BEACH: So, this is Josie. I guess my question is so you did these 32. What sample size are you thinking we're going to need once the coding is done? Will it be a percent or a certain number?

MR. BARTON: That's where the method is somewhat limited. Again, we wanted to look at claimants who would require dose reconstruction for the sole reason that DOE is already going to have to go hunting and compile the records for these specific people anyway. So this wouldn't be extra work like, as you may remember, when we did some claimant studies earlier on the CPP Class Definition we found some that we really needed DOE to go back and get those records.

And that generally took a couple of
months, extra months. So in my mind this was
kind of -- at least there was a first sort of
crack at it, but I feel it's killing two birds
with one stone because we're already going to go
searching for these records, for these specific
people.

So it is restricted again by claimants
and by claimants that require dose reconstruction
and that have that security number that
definitely ties the temporary badge to the
claimant.

Now this was looked at CPP visitor
badge, visitor cards again from about mid-1967
into early-1970.

As I understand it the visitor cards
prior to that period, so from 1963 through 1967,
I believe they're also available. And actually,
I was going to ask NIOSH to clarify that point
because I was not able to find them yet and I
don't know if they're still being held up for
being uploaded to the SRDB or what the status of
those visitor cards are prior to roughly mid-1967.

DR. Taulbee: This is Tim Taulbee. The status of those cards are, actually, we haven't looked for them.

We looked at the temporary badge reports which is what was compiled from those cards. And that is the information that DOE is coding, is off of these reports, not the actual cards themselves. They've gone back to the reports and that is what they are entering at this time.

As far as the completeness standpoint that's where we looked at the monthly reports and then added up the names on all of those forms and got a very good positive match from that standpoint.

The status and the access of those cards, that I don't know. I know they're not coding those or scanning them from that standpoint.
What we will be receiving in the future is a printout of that page with that person's name on it with their dose listed. The same thing -- what you see on these temporary badge reports up through 1967.

After 1967, we will be seeing the individual cards themselves because those they did not compile into a report.

Does that help clarify?

MR. BARTON: That does help. So essentially the issue that really sprung up was around that 1967 time frame when if you weren't part of the dosimetry system already even though you had a visitor card and it wasn't getting onto that temporary badge report listing.

Did I repeat that correctly?

DR. Taulbee: Say that again.

MR. BARTON: Around 1967 is when the issue really cropped up that you had people who have visitor cards but if it was zero dose and they were not already in the dosimetry system
then they keep the card but they did not transfer them, if you will, to those temporary badge reports.

DR. TAULBEE: Yes and no. You are correct. However, prior to 1967 if somebody had a zero dose they still weren't entered into the system.

So you could have appeared on those temporary badge reports and you weren't entered into the system.

Now, in some cases, those people with zero dose are listed and we get them. But the nuance associated with that was that notes for anybody on the page that had a positive dose, they got pulled out and put to the front of the file, and those are scanned early on in the project which is why we get some zeroes but not all of them.

MR. BARTON: Okay, I think I understand. Really the concept would be the same then. So we're saying to a certain number, again
we're restricted by the criteria of who DOE is actually going to end up going back and pulling these records for just for dose reconstructions that have to be revised.

Now, the other option would be to just pull a random sample out of these temporary badge reports and ask DOE to go hunt down those people. This would obviously be sort of outside the normal record searches for dose reconstruction for Department of Labor. That's certainly something we could look into in which case you could have a definitive percentage of the records that we're looking at.

It gets a little bit muddy because as Tim just said some of those zeroes that are in there have already been captured for certain people.

So again, we were trying to focus on those records that currently aren't making it into a worker's file. And the only way we know that is because we have claimants currently where
we have DOE files from before this coding effort happened, and then we'll have revised records requests which ideally would include all these records that were missing. And we know they were missing because we can compare those to before and after essentially.

So there's no real -- I can't put a percentage on it because it was really restricted by how many workers we can identify that fit the criteria of a claimant needing a dose reconstruction and also that those records are currently missing from their files.

And the alternative would be we could do a pure random sample and ask DOE to go and hunt them down. I'm not sure how that mechanism would necessarily work or what kind of time frame we'd be looking at to do that sort of validation of the implementation side of this issue.

I'm not sure if that answers your question, Jodie.

MEMBER BEACH: No, but I like the idea
of a random sample even though I know it's got some difficulties.

MEMBER MELIUS: This is Jim Melius. I have another related issue.

You pulled together your samples for this report, the cases, claimant cases in September or maybe even before that. I don't know when you stopped ascertaining cases that would fit this.

It's now May, nine months later. By the time we get access to the -- by the time DOE is supposed to be done entering, doing all the data entry and so forth would it make sense at this point to add -- go back and look at additional claims since whenever you ended your ascertainment?

MR. BARTON: That's certainly something we can go do to expand.

Again, when I put this together it was intended to be a protocol with a proof of principle, not necessarily the entirety of what
we could potentially look at.

And don't forget, just to simply test the coding effort, this isn't just at CPP. It could be expanded to the other facilities just to see how from an implementation standpoint the coding effort is going.

If we find visitor badges at hand that were missing originally from the claimant files then those would certainly, in my mind, be just as valid as going towards validating the implementation and DOE's coding and indexing efforts.

So that's another avenue we can go to expand to a larger sampling size.

And again the other option would be we simply pull a random percentage of groupings. It could be just from CPP since that's the topic of the SEC. We could pull just random workers and ask DOE to go give us all the records on those workers.

That's the other option. Again, I
proposed the one in which we could look specifically at claimants because these are the situations where we have been missing those temporary badges. And we're looking specifically at those people where if you look at their file right now they're missing a badge that we can go manually find in the captured records that NIOSH has.

MEMBER MELIUS: Okay. But there are some number more of those captured records now.

MR. BARTON: Yes. This is not by any means complete.

Again, I just wanted to prove that you could go in and I listed the ones I looked at. These were actually from the visitor cards.

We can pretty much go look at those temporary badge reports and do the same process to expand the grouping if that's certainly what the Work Group wants us to do.

DR. MAURO: Bob, this is John Mauro. I've got a question for you.
I understand how the search and the completion of this I guess coding process would provide information that will help in dose reconstruction for the CPP workers.

To what degree does this very same investigation help toward the definition and implementation of the SEC which is based on having a film badge? Does this have play there also?

I don't know if that question is clear.

MR. BARTON: It affects both, obviously. If these badges are missing from workers' records that show that they entered CPP then obviously making sure that those are indexed and correctly associated with a worker will affect any SEC decisions for that worker.

At the same time, it also affects -- the DRs obviously would miss doses and that sort of thing.

And again, I keep talking about the DR
only in the context that DOE is already going to be going and getting these records for the subgroup of workers I identified, because they need a revised dose reconstruction.

But yes, this coding effort is definitely very important in the SEC context because all you need is that one badge. And if these badges aren't being associated correctly with the workers then that's obviously an issue.

DR. MAURO: Thank you.

MEMBER MELIUS: This is Jim Melius again.

So, I'm trying to think of what level of effort would be required to expand your current sample to bring it more up to date in terms of claims that have been filed since whenever you -- since your September report, the claims that are included in your September report.

MR. BARTON: It actually runs in the other direction.
What we did is we looked at the temporary badges first and then tried to identify claimants from that population. So it's not necessarily that we took claimant number one and then went and looked and see if we could find them in the temporary badge reports. It was really the other way around.

MEMBER MELIUS: Okay.

MR. BARTON: So that would be affected by any new claims. In other words, the first pass might have missed any claims filed since we did it last fall.

MEMBER MELIUS: Right.

MR. BARTON: But also there are other years, the years prior to 1967 mainly that we can look at in the temporary badge reports and pull out claimants from that to expand the sample size if you will.

So there's a couple of different things at play there.

CHAIR SCHOFIELD: This is Paul. I've
got a question.

Some of these claimants look like outside of the card from the CPP. They have gaps of some of them several years with no other health physics records.

What's going to be the impact on those?

MR. BARTON: Could I ask -- I'm not sure I quite understood the question.

A lot of workers will have gaps, and we really just can't say with any assurance whether that gap is because they were in a non-radiological area, weren't at the site at all, or we are still missing records.

I mean, we just can never definitely say that when you see a gap. I can say -- again, when we went through the sampled workers we have a badge, it has an S number that I can take back for that claimant, and I can look at that claimant's file and say this record is missing.

And then when those records get
revised and DOE sends the newly coded data over to perform the dose reconstruction then we can say well, either they got that record and it's now correctly associated with a claimant, or it's still missing and the coding effort did not correctly identify it.

But as for any individual gaps for any given person it's just very difficult to make any sort of conclusions about why the gap exists.

Again, were they monitored and we don't have that data? Were they not monitored for good reason? Were they not even on the site? We just can't know.

CHAIR SCHOFIELD: Okay.

MEMBER BEACH: So moving forward we need to decide what kind of sampling we're going to do based on this plan.

MR. BARTON: Right. I think there's probably two or maybe three options.

The first option is exactly what you see here which is -- again, it's restricted to a
number of years in '67 to roughly '70. But that can be expanded.

And then the other option, as we mentioned earlier, would be a purely random sample in which case we would essentially just give DOE a list of names, ascertain whether they exist, and ask them to pull records for those individuals and see if their coding effort has captured them.

The difficult part about the second one is we don't know what's currently missing from those workers' files. So we wouldn't know if DOE had already been correctly sending those a year ago, for example.

In this method we already know that DOE wasn't sending this record for this individual, and these records for this individual. We already know that they weren't included because they weren't properly indexed.

MEMBER BEACH: Right.

MR. BARTON: That's sort of the
MR. KATZ: So Bob, I'm just going to expand for Josie on that.

So, even though scientific study, like random samples. In this case, you're going to have a lot of wasted hits you might say or whatever, wasted cases in a random sample. There's going to be a bunch of those that really didn't matter anyway.

Whereas what Bob's proposing, it's focusing on the cases that will matter. So it's really a more intensive approach. Expanding it to get -- so all the cases that could be added once we have the coding done. If you do that it's a more intensive approach looking at exactly the problem that we're concerned about.

MEMBER BEACH: Yes, that makes sense.

Do we have a sense of how big that sampling would be at this point?

I mean, we just did 30.

MR. KATZ: We can't know what he has
MEMBER BEACH: Right.

MR. KATZ: We don't know how many cases will be added. We find that out when the coding is done and Bob does that second run, basically, to pull cases.

MR. BARTON: That's correct, Ted. And I'd just add onto that that's it not just new claims that have been filed.

We didn't go through every single possible record just to find these sort of specialty claims where there is a real problem that we observed simply because we wanted to get approval from the Work Group before putting that kind of level of effort in.

What we did was a proof of principle saying well, we looked at these subset of records and we did find claimants who fit those criteria. So part of it would be simply expanding that to the remaining CPP records, and if the Work Group likes we can expand it even further to other
areas of INL where coding is still going on with those sites just like it's going on at CPP.

MEMBER MELIUS: This is Jim Melius. I think the initial step is we continue on this pathway with the expansion, as Bob just proposed. I think then let's see. I'm not saying that we wouldn't want to look at a different area or whatever, but I think let's see what we find in this exercise, this evaluation, and then decide do we need to focus on different time periods and so forth or how we do it.

In terms of expanding to other areas of the site I think it somewhat depends on what we're -- I think the next item on the agenda would be potential 83.14.

Are there other areas where we're going to have this same issue in terms of concern about the Class Definition.

MEMBER BEACH: That sounds like a good approach, Jim. And not to expand it at this time to other areas.
MR. BARTON: Just to clarify, I understand holding off on the other areas.

Would the Work Group want us to expand just to the rest of the CPP temporary badge records? We have a proof of principle here, but there are more records out there that we can look for additional examples of claimants where the files are missing.

MEMBER MELIUS: Yes, I would say yes. Gen is not on the phone call, but it's a point she's made in previous discussions with this is well, you know, I think Tim has also we've discussed in the Work Group is sort of how many is enough.

What is enough to say -- how many cases with claims that don't match up are adequate to say that we need a more open Class Definition.

And so I think that having additional claims in this initial effort would be helpful. I also think it might help us to focus if there's
a particular time period, or type of worker, or whatever.

I think we'd probably do that as well as a random sampling. But let's see. We may want to focus a random sampling later as the next step.

I don't want to carry it too far in terms of speculating on what might be useful, but I think this would provide us with some initial information, enough initial information to decide, at least make a decision on what -- do we need to do more, or has this been adequate.

CHAIR SCHOFIELD: Do we have any -- percentage-wise number of people that have this data missing that might show up in these cards?

MR. BARTON: So this is Bob again. Unfortunately no, we really don't know. It's a process of going through and first identifying claimants in the temporary badge records and then looking to see if those temporary badge records are actually included in their individual files.
as opposed to, we capture files that NIOSH has 
that are thousands of pages and include hundreds 
and thousands of workers on them.

So, it's really not possible to know 
exactly how many which is sort of like -- you 
could get a percentage of the temporary badge 
records if you did the random sample.

But as Ted had mentioned, you'll have 
a lot of -- it sort of muddies the water. 
Because even though you could say well, you know, 
99 percent were found, 99 percent might have been 
found a year ago.

And so we're not really testing the 
hypothesis of how well this new coding effort is 
going to be able to be implemented for those 
badges that we do know are missing, but only 
because we found them in sort of a manual effort 
really.

CHAIR SCHOFIELD: Well, I've got one 
other question.

I know some of the people with missing
badges are union people. Did the local unions keep any of this information in their records that you are aware of?

MR. BARTON: I personally have not seen anything that would indicate to me that the individual subcontractors necessarily kept separate dosimetry files.

But I'd certainly defer to Tim and his team on that.

DR. TAULBEE: This is Tim Taulbee. We did not check with unions from that standpoint.

What I do know is that a copy was provided to them of their employees. But the main record that is currently being coded was also kept at the INL dosimetry records. And so that is what is being coded at this time.

So, we have not pursued that and we're not planning to. We don't do that at other sites either. We go with what the site's records were and as we indicated earlier we've already compared these temporary badge reports, these
visitor badges with the number that they said they had issued and we're seeing really good agreement.

So, I believe this to be a complete set.

The question as Bob was pointing out is have these made it into the DOE records system once this coding effort is completed such that we can see these same badges now when somebody files a claim.

CHAIR SCHOFIELD: So, the question I would have -- this is Phil -- is what -- how long do we expect this, before we would have enough data that we could make a really well-informed opinion of where we need to be going on this.

Is there any particular timeline that you have knowledge of?

MR. BARTON: Well, this is Bob. I guess from my end the first step would be to expand to the other years at CPP and see how many more claimants we can identify that have these
missing temporary badges.

And that can be done while the coding effort potentially wraps up.

Then it's a question of requesting those records from DOE which I don't really have a good handle on. I assume it's probably a month or two for them to research a number of claims and get all those records together and send them over.

But again, I don't have a great feel for that. I don't know if anyone over at NIOSH may have a better idea.

But once those records are searched by DOE and transmitted to NIOSH based on the new coding effort it's a very simple process of going through and seeing if the ones that were missing are now present.

DR. TAULBEE: Also, to give some idea, it actually depends upon how many people you all decide that you're going to evaluate and re-request the records from.
When we did the ANL-West effort of specific people from the early time periods to see if the records were complete, or whether they were in Idaho, or whether they were over in Illinois, it took about -- I want to say about one to two months for about 30 claims.

So, if the number stays about the same or maybe 40 then we're probably looking closer to the two-month range.

If the number increases and you decide you want to look at 80 you're probably looking at three or four months.

So it really depends upon how many people you all select and send over to DOE for them to pull the people's files. Does that help?

CHAIR SCHOFIELD: Yes. I was just wondering if there's any way we could maybe, I don't know, make this process a little sharper so that we don't have as long of a lag time.

Because you know, this could drag it out -- given the number of years could drag it
out for quite a while.

I guess what I'm looking for are suggestions on how to speed this process up a little bit if anybody has a suggestion.

MEMBER MELIUS: This is Jim. I think the only way to speed it up is going to be, you know, whatever can be accomplished before -- to make the June deadline then they've got to have a little bit of time for looking for additional cases, claims, and then it can also be done incrementally.

So the claims that have already been identified can request those records. And then new ones can be done as another batch or whatever.

Does that make sense?

CHAIR SCHOFIELD: It seems like a reasonable approach.

MEMBER MELIUS: Make sense to Bob and Tim?

MR. BARTON: This is Bob. I think
you're exactly right. I think right now -- as soon as the coding effort's done, we can send the first batch for DOE to start researching and then when they get those records in like I said it's going to be a pretty quick process to go and look at the new transmittal from DOE and see, alright, those missing badges are there, or they're still missing.

DR. TAULBEE: This is Tim. I agree. I would not send that list until they finish the coding though.

And the reason is the same people that are doing the coding are the same people who are going to be responding and culling the data.

If you send it now your coding's going to be delayed while they're beginning to look up. I would wait.

MEMBER BEACH: That sounds good. So the other thing we haven't talked about is you noted in your conclusion, Bob, that there were at least two claimants that had spelling errors and
coding transposed numbers.

And you said it has an implementation issue possibly. Can you expand on that just a little bit? Would these two individuals not be included because of those two issues?

MR. BARTON: I would want to include them, I think, because those types of errors are sort of what preempted this entire discussion is that notion that we're sort of working off in some cases handwritten records, in other cases they're typed.

But the human errors present such as spelling mistakes, or the transposition of the S number, and how is that reflected in this coding effort.

Now you know, I don't think it's possible or even reasonable to assume that they would be able to catch everything along those lines, but it would also be very informative to say like well, listen, we had this person that's part of our study. There was a transposed letter
in his last name but it still was caught based on the S number. There was a transposed S number but it was still caught based on that person's last name. It kind of goes both ways in that front.

So I think it would be useful to include those people just so we can have a discussion about how the coding effort either did or did not catch, I guess you can call them variations when you try to code that kind of data from some cases handwritten, some cases typed.

But there's going to be human errors, unavoidable. It's good to understand what those are, how well they're dealt with, and then have a discussion about what the implications are on that.

MEMBER BEACH: So those two were caught and they would have been included so that that process you're saying worked and caught those.

MR. BARTON: I would certainly hope
so. I would hope that it would catch them. But again we don't know until all the coding is done and then we go and request the records for some of the individuals where we saw a couple of variations.

MEMBER BEACH: Okay. So it's good to make note of that then. Thank you.

MR. BARTON: No problem.

CHAIR SCHOFIELD: Does anybody else have any input on this particular subject?

DR. TAULBEE: None from NIOSH.

CHAIR SCHOFIELD: SC&A?

MR. BARTON: I guess I just want to clarify our marching orders if you will.

As I understand it obviously we're not going to be sending in any data requests to DOE until the coding effort is done.

But as I understand it we would look to expand the number of claims at CPP for some of those early years in the meantime while that coding is still being performed so that when it
is done we'll have a hopefully somewhat larger cohort to look at.

Or should we just keep what we have for now and when the coding effort is done we make the request for 32 claims and then we see what we see with those 32 first before trying to expand.

MR. KATZ: Bob, so I think the decision was and the recommendation from the Work Group was to expand as much as you can expand it at the point you have all the coding done.

MEMBER MELIUS: So it's expanding the earlier years and also additional claims from -- that weren't in the original sample that might be from the years that are covered already.

MR. KATZ: Right.

MR. BARTON: Okay, I understand.

Thank you.

CHAIR SCHOFIELD: Josie, do you have any input?

MEMBER BEACH: I'm comfortable with
CHAIR SCHOFIELD: Okay, then I think we've got that covered. I'd like to spend time on the burial grounds now.

NIOSH Priorities for August ABRWH

83.14 re: Burial Grounds

DR. Taulbee: This is Tim Taulbee. I didn't notice this actual typo until it was too late here.

From the August Advisory Board on Radiation -- your August meeting the 83.14 that we'll be proposing to you all will be for CPP, not the burial grounds.

This is an expansion of the CPP Class up through 1980. So, the burial grounds 83.14 is a separate effort that I do want to talk to the Work Group about so it's okay to be on the agenda here.

But as far as the Advisory Board meeting in August we do have a draft of the 83.14 for the CPP expansion that is working its way
through review, and we do hope to have that --
well, we plan to have that out to the Work Group
-- to the full Board in advance of that meeting
such that I can present it at that meeting, at
the August meeting.

So are there any questions about that
before I jump onto the 83.14 for the burial
grounds?

MEMBER MELIUS: Yes, one question.
Just in terms of timing, is it feasible for that
to be released in time that we -- so the Work
Group can have an opportunity to review it prior
to the August meeting? And to possibly meet to
discuss it.

DR. TAULBEE: Let me check the current
timing of that. I'm actually not sure.

MEMBER MELIUS: Okay, so if you can
just let us know. I'm trying to facilitate if
there are questions about it or something.

DR. TAULBEE: Right, no, I understand.

I understand. Give me just a second here.
It's currently scheduled to be delivered to us in the middle of June. So probably four to six weeks after that.

MEMBER MELIUS: So we're cutting it close.

DR. TAULBEE: Yes, we're cutting it close.

MEMBER MELIUS: So let's just see where we are then.

DR. TAULBEE: Okay.

MEMBER BEACH: To be clear, Tim, that 83.14 is simply CPP, and it does not have anything in the later years, and it has nothing about the burial grounds.

DR. TAULBEE: That is correct. That is correct. This is where we concur. What we found was those procedures and changes of CPP monitoring that were recommended by -- in that report of October 1974 to increase the bioassay, to clean up the areas, to reduce the contamination levels, improve the air monitoring
and so forth actually do get implemented as fast
as what we anticipated it might be.

And so we committed when we presented
the original ER to evaluate when they actually
implemented all of those things.

And the bioassay really didn't begin
to kick in until 1980 is when that began to
happen. And they did have some other incidents
in the late nineteen seventies with that shift
lot as well.

So that's the basis for the 83.14 for
CPP, to expand that Class.

MEMBER MELIUS: And refresh my memory,
but the monitoring practices at the time were the
same as before, or changed, or what?

DR. TAULBEE: As far as badging to get
into the area? Actually, they changed back.
They reverted back to the one area -- one badge
one area.

So that actually might have some
bearing on what Bob and you all are proposing
MEMBER MELIUS: Yes.

MR. BARTON: So, they did implement -- they went away from the all-area badging back to one badge one area.

MEMBER MELIUS: Okay.

DR. TAULBEE: And like I said I'll go through all of this more when the report is out, the presentation to the Board. So that's what we're planning for the August Board meeting.

Okay. As I mentioned in the March Board meeting that we are going to pursue an 83.14 for the burial grounds for the retrieval of waste.

Now, this is before we got the report that SC&A released last week, or the week before last rather on the burial grounds. That is the fourth bullet here on the agenda.

And so my question to the Work Group is do you want us to pursue the 83.14 for that waste retrieval operation, or do you want us to
focus on responding to SC&A's report. Due to kind of resource issues we can't do both simultaneously. I guess we potentially could, but that would take some herculean effort here.

Or -- so we prefer to do them serially, but which one is the higher priority to the Work Group.

MEMBER BEACH: Tim, a question for you on that burial ground. I had sent an email asking, requesting some information on some of your data.

And I thought we would have that before now. Can you say where you're at on that?

DR. TAULBEE: Yes. Mitch and I are assembling that. I apologize for it being late. Both of us have been out quite a bit the past month. I'd hoped to have it to you last week, but we're just not ready yet from that standpoint. But we are working on your request there of pointing out specific special bioassay of workers being monitored.
I do hope to get that to you in the next couple of weeks.

MEMBER BEACH: Okay. So, you're talking about working on an 83.14 for the burial grounds, correct?

DR. TAULBEE: Yes.

MEMBER BEACH: And what time period?

DR. TAULBEE: This would be 1970 through around '77, '78 when we began to see a lot of bioassay for the burial grounds. Specific bioassay for the burial grounds.

MEMBER BEACH: Okay. And this report that SC&A has out is for those earlier years, and you're saying you cannot simultaneously work on both of those.

DR. TAULBEE: No, we've got the same people doing both. So I'm asking which is the higher priority for us to respond to.

MEMBER MELIUS: This is Jim. I'd say the 83.14.

MEMBER BEACH: Yes, I can't say I
disagree with that, but how far off would be responding to that report be then, the early years?

DR. TAULBEE: It would be fall at the earliest, I would think.

MEMBER BEACH: It almost seems to me the 83.14 should encompass that '53 all the way to '77.

DR. TAULBEE: Well, we only made a decision about the earlier time period, and this is where SC&A's comments come into it.

The reason for us potentially expanding was there's a big change in operations in 1970. The big change is, one, they were burying waste. Starting in 1970 time frame, 1971, '72 they started digging it up.

So, from our standpoint there's a much higher potential when they were doing that digging up of the waste. And like I said, we don't see any bioassay right now, but that's part of the 83.14 evaluation.
CHAIR SCHOFIELD: This is Phil. I've got a question on that kind of limited experience of our facilities that have burials going on.

That's the fact that these personnel working in those areas, the materials going into those dumps comes from all over the site.

You've got about every isotope you can think of going into this waste stream. Which unless they had a very broad spectrum analysis done, I would be concerned about whether you're catching a lot of what potential exposures are when they were burying this material, and not just when they were digging it up.

MR. KATZ: Phil, that concern is sort of at the heart of the SC&A review which they will address.

But with an 83.14 once NIOSH determines feasibility for a Class of workers it has to proceed with that 83.14. It can't really say okay, we're going to put that off and evaluate the present thing, and add that to this.
If they have a claimant who's represented by an 83.14 they're supposed to proceed with that.

DR. TAULBEE: Right, Ted, but we're not quite there yet with this 83.14.

The potential that we see right now is that we know they were digging it up under what we call the initial drum retrieval operation, and then there was a second one where they were beginning to dig up the waste.

From the coding for the coworker data set looking at the bioassay for the people involved with that and we're not seeing much routine type of bioassay until we get into the '77 and later time period.

So, we're seeing the potential there that causes us concern which is why we want to investigate.

(Simultaneous speaking)

DR. TAULBEE: -- the point you were saying yet, but we're kind of guessing that we're
going to have an infeasibility during those recovery operations, the early part of the recovery operations.

MR. KATZ: Okay, got it. So you would have to identify a claimant anyway to proceed with the 83.14, right?

DR. Taulbee: That's correct.

MR. KATZ: Okay.

DR. MAURO: This is John Mauro. Just a quick observation. After reading Joe Fitzgerald's report, it's a very broad-based report with lots and lots of rich information on places where there may be some weaknesses in terms of the ability to reconstruct doses.

So I guess I would just say that reading the report and getting a sense of SC&A's perspective on where there's softness in the records, and the HP oversight program almost as if it's background information that I think it would be very useful as you're pursuing your 83.14. It may be self-evident to say that, but I
just wanted to point that out.

DR. TAULBEE: I understand. I agree.

CHAIR SCHOFIELD: Just from my own perspective I have a question as far as you're looking at like the bioassays and stuff that were done.

Was there program bioassays that you would consider to be at least a decent standard in the earlier years when they were burying a lot of this material before they started digging some of it back up?

DR. TAULBEE: Yes. In the earlier years they were one of the first sites to really kind of implement whole body counting for the mixed fission products.

There was also from the alpha monitoring. The bioassay laboratory and the techniques at that time were RESL, Radiological, Environmental Sciences Laboratories.

So they were quite top notch as far as being able to analyze the samples.
The question that SC&A and Josie has posed -- well, from the report, and SC&A, what we want to get back with Josie on in our initial evaluation we indicated that when something happened that would require a bioassay or follow-up that they sent people to Central Facilities for that particular analysis.

So Josie's asked for examples of where that has occurred. And that's what we're compiling hopefully within the next few weeks here for Josie. Well, for the whole Work Group, obviously.

But that's what we're currently looking at.

They did not have a routine monitoring program at the burial grounds during burial. It was on an as-needed basis.

Now, and that actually appears to have continued through when they were retrieving waste. And that's what's causing us some concern.
But we do begin to see a routine bioassay monitoring program in the late-1970s for the burial grounds.

CHAIR SCHOFIELD: Okay.

MEMBER MELIUS: This is Jim. I still think the 83.14, or potential 83.14, ought to take precedent in terms of NIOSH efforts at this point in time.

CHAIR SCHOFIELD: I agree with you, Jim.

MEMBER MELIUS: Yes. I just think it needs that. We'll get to the other report, the earlier years in turn. And maybe looking at the later years will shed light on the earlier years. More helpful to address that issue, some of those issues.

DR. TAULBEE: Okay. If that's the direction then we can certainly pursue that. That's actually the opposite that I thought we were going to go, but that's quite all right. We can certainly adjust and do that.
MEMBER MELIUS: You said you were going
to do the opposite.

DR. TAULBEE: But that's quite all
right. We can do that. Not a problem. Thank
you. Thank you for the clarification on that.

That was all that I had for this
particular topic there, Phil, was the requesting
of the priorities of what it is you wanted us to
work on from that standpoint.

I will say this for the whole Work
Group's benefit. There are other reports that
SC&A has put out in the past that we are going to
begin to work on and we can work on those in
parallel.

It's just the people that focus on the
burial grounds are skilled in the burial grounds
and so those people are the ones most informed on
it. And that's the resource issue.

But other things such as Argonne-West
and so forth we can begin to pursue in parallel.

CHAIR SCHOFIELD: I just had a
question. Was there any feel for -- I mean, I really don't know, did they tend to have a small crew that handled the burial grounds? Or was this a much broader effort where they brought in people from other areas to assist in the retrieval of some of these drums and burial containers? What kind of numbers are we looking at I guess is the point of what my question is.

DR. TAULBEE: Dozens. A few dozen, let me put it that way.

But it might be more people. But at any one time it's probably around, even during the retrieval around 20 to 24 type of people working. But it might be a different crew every day.

The burial grounds used yardmen and we found this from the interviews numerous times.

So one day a yardman might be assigned to the burial grounds. The next day he might be assigned to a hot cell. The next day he might be at MTR. So they moved around a lot.
Now, the health physics crew, there was four or five of them that were kind of dedicated from CFA and on any given day one of them might have been down at the burial grounds. Heavy equipment operators, we don't think that there's that many of them, but that they might have also been rotating around as well.

So, it's not a huge number of people during this time period, but it might be a lot of different people, if I said that correctly.

Mitch, is that your impression and understanding as well?

MR. FINDLEY: That's correct, Tim. Looking at some of the area exposure reports in 1975 it's like you said kind of dozens and then over time it looked like it ramps up as it becomes more of a -- more of a facility, if you will, instead of an operation.

DR. TAULBEE: Does that answer your question, Phil?
CHAIR SCHOFIELD: Yes, it does. I mean obviously the numbers will start shaking out as you get farther into this.

DR. TAULBEE: Yes.

MEMBER BEACH: Tim, you also indicated you'd have a short White Paper on emergency responders. And I realize that hasn't been -- isn't out yet.

What is that about or for?

DR. TAULBEE: That was the -- kind of summarizing all of the interviews where the question at CPP was were they monitored during call-outs. That's what that's about.

MEMBER BEACH: So we should see that shortly as well.

DR. TAULBEE: Yes.

MEMBER BEACH: Thank you.

MR. BARTON: Are we ready to go to the next agenda item?

CHAIR SCHOFIELD: Unless somebody else has some input I think we're ready to go on to
the next -- for the dose reconstruction records
priorities for the reactors.

MR. KATZ: So I think that's Steve, right?

CHAIR SCHOFIELD: I believe so. He's got the --

Priorities for Evaluating Reactor

DR Records/Methods

DR. OSTROW: This is Steve. I'm looking at the agenda. There's two points, priorities for evaluating reactor dose reconstruction records. That one we know about, who is doing it.

The second point is flush methods.

That's my stuff.

CHAIR SCHOFIELD: Your presentation is on the website for the public, isn't it?

DR. OSTROW: The presentation, I don't think so because I don't think NIOSH has been able to post things the last couple of days.

MR. KATZ: So Steve, the reactor
prioritization methods is the same, right?

DR. OSTROW: Okay. That's fine. I'm ready to give a presentation. Let me see if I can get a PowerPoint presentation up here.

Everybody in the Work Group and the SC&A and NIOSH and ORAU got my PowerPoint presentation a couple of days ago by email so they can refer to it. Let's see if I can get it up on Skype also. Let me see if it works here.

(Off the record comments)

DR. OSTROW: Alright, so this is the reactor prioritization. And if you have the slides, great.

Just a brief introduction is on page 2. We've been looking at many different aspects of the Site Profile and SEC investigations one of which is related to reactors. And that's what I'm going to focus on.

And we have about a two-year history of discussions and White Papers and going back and forth between SC&A and NIOSH.
Did it just come up right now?

MR. BARTON: Yes, Steve, I just tried to throw it up there. I don't know if people see it.

DR. OSTROW: Okay.

MR. KATZ: Yes.

DR. OSTROW: Yes, it did go away. Do you want to give it another try and see if you can get it up?

Okay, anyway, we'll go on. So we're right now on the introduction slide, page 2.

Alright, so we came out with a report on December 8. Oh now it's up again. It disappeared.

Anyway, we came out with that report on December 8 looking at responding -- as I said there was a whole series of going back and forth between us, NIOSH and ORAU about looking at reactor analyses.

And our latest report, the December 8, looks at NIOSH's reactor analysis plan that Tim
Taulbee had created. And also discussed a few other issues that were related to reactor modeling.

And the purpose of our report is to put everything together in one place and to inform the Work Group of where we are, and to provide for the Work Group and to provide some guidance to NIOSH and SC&A what we should do next.

NIOSH needs information on prioritizing the new reactor and the irradiated fuel characterization studies related to reconstructing internal doses where bioassay data are not available. So what do they look at next?

And we also address some specific concerns we had relating to modeling the Test Area North and test reactor area operations. We had expressed those concerns in separate reports in 2015.

Next page, page 3, background. This is the -- we've been discussing this for years
already, the OTIB-54 which is fission and activation product assignment for returning dose-related gross beta and gamma analyses.

Where is this applicable? Specifically for INL reactors. We had performed preliminary assessments in 2015 and 2016 of whether the OTIB envelope be important condition to the INL and ANL reactors and prioritized reactors to high, medium, and low categories.

Subsequently we focused just on high priority category.

NIOSH responded last July, Tim's report, with a plan for additional reactor evaluations.

We were asked by the Work Group to look at Tim's report and comment, and that's what the current December report is on which was about five months ago now.

Page 4 slides. Just to remind people why we were looking at this. The operations at INL/ANL-West were very complex involving
reactors.

And we had all sorts of unique situations about fuel, blankets, reflectors, moderators, coolants, operating scenarios, burnups which would all affect the applicability of the OTIB-54 methodology.

And to remind people, there were 52 reactors at INL. There were 34 INL reactors and ANL-West reactors. Those are the ones we're concerned with. And there were also four at the naval research facility which we're not concerned with, and two reactors never actually operated. So we're left with a lot of reactors.

Next page, slide 5. Just to refresh everybody's memory about what is OTIB-54. And this is a real nice tool that NIOSH developed.

It determines internal doses when you only have gross beta or gross gamma measurements. And it assigns fission and activation product intakes to different radioisotopes that are directly tied to indicator radionuclides, either
strontium-90 and cesium-137.

So, the OTIB looked at four different reactors which are supposed to be representative of the whole universe of reactors and generated nine different representative cases using the ORIGEN code.

So the question we have now, this was investigating, is given a particular INL/ANL-West reactor does it fit within the OTIB-54 envelope, or conversely can you use OTIB-54 to model these reactors adequately.

Okay, page 6. We had in two different reports as I mentioned looked at all the INL and ANL-West reactors, and assigned priority rankings to each, high, medium, low, which they should do first, second, third.

So, we looked at things like fuel types, moderators, reflectors, coolants, operational modes. Some were steady state, some were intermittent, some operated in burst mode. Some were deliberately or inadvertently melted.
Length of operation and overall burnup.

And at the last Work Group meeting the Work Group asked us also to take a look at the potential for exposing workers to radiation.

Because if you had a reactor, a bizarre reactor, something which couldn't be modeled, but it didn't expose anybody, then you don't really care about. So that goes to the exposure potential.

And in our report Appendix A covers that. Bob Barton did a terrific job with that. So it's there to look at.

And finally were there any particular incidents, other factors that have potential to expose people.

So we -- here we're at page 7. We ended up looking at just high priority category, and we categorized seven INL and seven ANL-West reactors in the high priority category.

For INL we had LOFT, OMRE which is the organic-moderated reactor, Power Burst Facility,
and the SPERT 1, 2, 3, 4 reactors.

ANL-West we had also seven reactors, the five BORAX, boiling water experiment reactors, and the two EBR reactors, experiment breeding reactors.

That's what we recommended for high priority.

Page 8. Responding to our report, NIOSH wrote a long memo that made several recommendations. And I took this from Tim's report. I'll talk in more detail later.

But basically it posed merging the INL and ANL-West high priority categories together. It didn't make any sense to do them separately. Eliminating several reactors from the high priority category and reasons were given in the report for the SPERT reactors modeling the most extreme experiment as a bounding case, and also modeling the bounding case for the last two EBR-I cores.

That's a quick summary of what's in
Tim's report.

Page 9 lists that NIOSH proposes to do the evaluations they proposed to do. So it's OMRE, PBF, the SPERT reactor, BORAX reactors, EBR-I core 4 and EBR-II.

So I read that quickly but you can go read it from the slides or the report.

I'll get into the guts of it now.

Beginning on page 10 of 15 pages I had listed here on the second column NIOSH's recommendation from Tim's report.

And the last column is SC&A's evaluation from the December report that we put out. And this is taken verbatim from both reports.

And there were eight different items here from Tim's report that we responded to. In general, we concur in most cases with NIOSH. We only have a few differences here.

So the first item, NIOSH proposes merging the INL and ANL-West high priority
categories for evaluation. And we concur. There's no reason to have INL separately and ANL-West done separately. So however NIOSH wants to do it, whatever order, that's fine with us.

Item 2, NIOSH proposes that the LOFT, that's the loss of fluid test, be removed from consideration because nuclear operations did not commence until December 1978.

So we disagreed with NIOSH here. First, we recognized that the first five LOFT experiments were non-nuclear thermohydraulic experiments, and the potential for radiation exposure didn't occur until December 1978. So NIOSH is correct about that, which is after the SEC period.

But we believe that given the facility 5 long operating history, beyond design basis operating scenarios, and potential to have exposed a significant number of personnel that LOFT deserved a more detailed examination with respect to OTIB-54.
While it may not be an SEC issue they're recommending that this be conducted perhaps as a Site Profile exercise. We think it's important that LOFT be modeled. That was item 2.

Item 3, both NIOSH and SC&A agree that OMRE, the Organic-Moderated Reactor Experiment, be modeled because that had a unique moderating coolant that's certainly not covered by OTIB-54. It's not obviously covered anyway. So item 3, on OMRE, we agree.

Next slide is slide 11, item number 4. We agree that the Power Burst Facility should be evaluated since they used ceramic fuel which is different. So we agree on item 4 for OMRE.

Item 5, this is the SPERT experiments. NIOSH proposes a model for the most extreme experiment from all the SPERT in terms of possible departures from OTIB-54, be used to represent the bounding case to cover all four SPERT reactors.
So NIOSH basically wants to pick one case that they think is the worst from all these SPERT reactors and model that.

We disagree. Although the four SPERT reactors were all part of the same series of reactor experiments that subjected the reactor to large reactivity excursions, they still differed significantly from each other and should be examined separately, perhaps by choosing the worst case scenario for each reactor.

So rather than picking one worst case for all four SPERT experiments, we recommend picking -- looking at each of the four experiments and just picking one worst case for each one of the four.

So we disagree with NIOSH. We think they should do a bit more modeling than they're suggesting.

Item 6 which is on the next slide, slide 12. This is the BORAX reactors, boiling water reactor experiment.
And NIOSH notes that BORAX-I, II and III all ceased operations toward the end of the SEC period for ANL-West. BORAX-I was 1954 it ended. BORAX-II was 1955 it ended. And BORAX-III ended 1956.

So NIOSH proposes removing BORAX-I through III. But NIOSH agreed with us that BORAX-IV should be evaluated for the OTIB-54 applicability due to the use of uranium thorium oxide flow which was different.

And NIOSH proposes that BORAX-V be removed from consideration because its primary function was to evaluate steam superheating. It was basically the same reactor as BORAX-IV, it just had a steam superheating module added to it.

So, we agree basically with NIOSH in this evaluation. But we do -- looking at it again like yesterday and discussing it with John Mauro, and we can write this down, we do have a bit of a concern for reconstructing doses even during the SEC period.
This is like a general comment too.
You have non-presumptive cancers and you have to do a dose reconstruction for them even if they are in the SEC period.

So it's a question if that happens it would be nice to know if OTIB-54 would apply to these reactors. That's just like a general comment John and I had.

John, are you on the line? Do you want to say anything about that?

DR. MAURO: No, I heard you. Yes, I'm on the line and you explained it. It's as simple as -- yes.

DR. OSTROW: And this doesn't apply just to BORAX. This is a general comment about all these reactors that operated during the SEC period.

Okay, next page 13, next slide, item 7. These are the Experimental Breeder Reactor 1 core, EBR-I.

And NIOSH proposed that the most
bounding case of the last two EBR-I cores be used.

And they further stated while it was initially believed that plutonium core would be bounding, some preliminary modeling would need to be performed on all four cores to confirm this.

And we agree. We concur with NIOSH. And we noted also that several hundred workers and visitors were present during the period of operation for the Mark 4 core. That's one of the last cores, if not the last.

And finally, item 8. This is EBR-II. NIOSH agreed with us that they should model the EBR-II.

And just a little note here also, in some years the average worker penetrating doses were greater than 100 millirem. So that has the potential to expose a good number of workers.

So that sums up our response to NIOSH's prioritization recommendations.

Our big report from December, also
adding Appendix A which the Board requested, and

Bob Barton did this.

This looked at the exposure potential
of different reactors. And I'm not going to go
through it because it's many, many pages.

But just in summary, the reactor sites
that we prioritized as high generally employed
hundreds of monitored workers with the exception
of PBF which only had about 30 workers assigned
during most of its badging cycle. But most of
the other reactors had hundreds of workers
assigned.

Penetrating doses were significant.
And with some monthly badging cycles averaging
hundreds of millirem. So if you have hundreds of
workers and the average was hundreds of millirem
per monthly badging cycles those are significant
exposures. We recognize external
exposures do not necessarily imply internal
exposure potential. We know that. But the
magnitude of the external doses give you some
indication of the source terms that are present and the potential for internal exposures too.

So, coupled with the extensive internal dosimetry program at INL for fission products, an adequate characterization of the mix of source term contaminants appears warranted.

So basically, we concluded that there was an exposure potential at these prioritized reactors. So it's worth looking into.

Now, there's two special cases. This fell through the cracks somewhat, and the Board last meeting asked us to take a look at it.

We had put out two reports in 2015, both on the same day, September 28. One looked specifically at the applicability of OTIB-54 to the TAN reactors. And the other one looked at the applicability to the PRA facilities.

So we included the comments from these two reports in our December 8 report to put everything into one place.

So slide 16, Test Area North. And
John Mauro led this. It got complicated so if I stumble here, I hope John jumps in.

This report John studied, looked at the applicability of OTIB-54 which is potentially you only have gross beta or gamma data available. And in the TBD, internal dose TBD, tables 5-22 and 23. That's when you have bio data, bioassay data available. To the applicability in OTIB-54 and these two tables to the internal dose reconstruction at TAN.

And John's study looked at the fuel from the heat transfer reactor experiments, HTRE test.

They were of particular interest because the reactor fuel operating conditions and so forth that underpinned OTIB-54 methodology reflect situations in which the burnup usually occurred over protracted periods of time, hundreds of days. The fuel maintained its integrity.

In contrast, the HTRE fuel had very
short burnup times and the reactors operated at a high temperature which allowed the fuel to melt in some cases.

In addition, HTRE used highly enriched uranium which is a little bit different.

Next page 17. So we decided to do a scoping study. To explore these potential concerns, SC&A performed ORIGEN runs ourselves where the isotopic mixture of fission and activation products were compared at different lengths of continuous operation.

We looked at 20 megawatts which is a low-power case and 200 megawatts, a high-power case.

When we looked at 20 hours and 200 days as extremes of power level for both power levels. And we also did an additional 20-day run for the high-power case.

So these were intended to give us an idea, a general representation of the operating conditions of HTRE tests. For example, HTRE-I
was operated at the 20 megawatts for 151 hours.

We were just getting some idea of what ORIGEN would do to these reactors.

So, the long period of time, the 200-day case, this is on page 18, are indicative of the long burnup times that were used to derive mixes of radionuclides in table 7-3 of OTIB-54, while the shorter burnup times, 20 days and 20 hours are typical of the TAN experiments. So -- and a further cooldown period of 10 days.

And then once we've got the isotopic mix we multiplied the relative amounts of fission products by organ dose conversion factors which yielded a relative index of harm for each fission product.

Then we summed up the indices of harm for each of the burnup durations. That would give us a rough measure of how we compared to the OTIB or the TBD.

And there's a lot of information in our original reports which we did in 2015, but
just in summary, it's on slide 19, for fission products the high-power levels, 200 megawatts, the indices of harm for the 20-day burnup and the 20-hour burnup -- rather short -- were about the same, were slightly higher than -- or slightly lower than the 200-day burnup organs of concern which is good, except for the thyroid where the relative index of harm was substantially higher by a factor of over eight. But for all the other isotopes it's about the same.

For low-power level, 20 megawatts, the derived indices of harm for the 20-hour burnup compared to the 200-day burnup for all organs of concern were not claimant-favorable.

So, for the case of HTRE, for example, where you have short burnup times we found that the comparison was not claimant-favorable.

Slide 20. We looked at actinides. We found that the ratio of the inventory of all actinides to the inventories of cesium-137 and strontium-90 were grossly overestimated compared
to the ratios in tables 5-22 and 5-23 of the TBD.

And we stopped our scoping analyses at that point.

So, what are our recommendations? We recommend that NIOSH continue these types of investigations to better understand the applicability and limitations of OTIB-54 and TBD tables 5-22 and 5-23 for reconstructing internal doses for TAN workers where the power levels and burnup durations are significantly different from those upon which the isotopic mixes are derived in OTIB-54 and the TBD tables.

So we did a scoping study and we came up with some — looked like anomalies and avenues that we think NIOSH should be looking at further.

They're better equipped than SC&A to go through all these ORIGEN runs.

And finally, I'm running out of steam here, but slide 21. This is a test reactor area report which I did in September 2015.

I looked at the three major TRA
reactors which is material test reactor, the engineering test reactor, and advanced test reactor that were run there.

They were all material testing reactors of similar designs but with size and power levels and capabilities increasing from the smallest, the MTR, up to the biggest, the ATR.

And the idea is that they have high flux capabilities. So they could simulate long-term irradiation of reactor materials in a shorter time.

The designs are similar. Pressurized light water moderated beryllium reflective reactors primarily using highly enriched uranium fuel and they had an unusual curved plate configuration.

Slide 22. So we found that the OTIB-54, in general, adequately envelopes the three TRA reactors. So we're fine about that.

And the OTIB actually explicitly modeled the advanced test reactor. It's one of
their characteristic reactors for uranium fuel operations.

But we noted that the MTR also ran for a period with plutonium fuel. In fact, in 1958 it became the first reactor run with a plutonium-239 core, which was different.

So the last slide 23. Our conclusion is not clear which, if any, of the nine OTIB-54 representative reactor cases would envelope the MTR with plutonium fuel.

So we recommend that NIOSH actually look into that, make some runs and see if -- with plutonium fuel and see if OTIB-54 models that.

So that's the end of my slides. Now I can breathe again.

DR. MAURO: This is John Mauro. Just a couple of perspectives.

In the examples of these index of harm tables that are at the end of the presentation this was a way in which Mike Mallett -- you may know him -- worked very closely who runs these
codes.

And we sort of put our brains together and said listen, what can we do. And that's a relatively simple that it comes up in an index of harm that would give an indication.

I think what we did was an attempt at a shortcut to try to get a handle on this. It's not intuitively obvious under what circumstances, what type of reactor, and what burnup rates, and durations are going to deviate from the claimant-favorability of OTIB-54.

And it wasn't apparent until we make these runs. And there's a lot of discussion, by the way, that supports all of these tables explaining why are things behaving the way they're behaving and these ratios, can we trust them.

So I guess the first thing I'd like to bring up is that I don't know the extent to which NIOSH has looked at our work, but we're very interested in seeing if they see it the same way
we do because it is a unique way to try to come
at this problem.

And then also given that it holds up
you will note that in most cases the ratios, the
degree of non-conservatism is on the order of
less than a factor of 2, on the order of 1.5.

In other words, OTIB-54, even in these
unusual circumstances where these HTRE cases, the
short-term versus long-term burnup, high burnup
rate.

OTIB-54 isn't that bad. I think
that's one of the -- the glass is half full here.
Pretty close. If it came out at 1.0 that means
bingo, OTIB-54 works.

When the number comes out greater than
1 it means that, well, it looks like OTIB-54 at
least in this simulation is what I would call a
shortcut approach to come at this problem shows
that for some organs, many organs it doesn't --
it's not entirely claimant-favorable, but it's
not that bad.
So I guess what I'm trying to say is that in the bigger picture where we're talking about just in my case here we're talking TAN, and really the heart of the TAN was the burnup rate and the burnup duration. Fundamentally simple but very fundamental to reactor operation and the fuel and what it might produce where we have fission products and activation products.

When it comes to a steam discussion, which is a much bigger story of a lot more reactors, that differ in more what I would call nuanced ways. In other words, as you described, reactor design, reflector, cooling, that sort of thing, as opposed to my HTRE where I said listen, these things had a very, very high burnup rate for a very short period of time so these are very different.

What I'm trying to say is that -- two things.

One, I would really be interested in seeing if NIOSH agrees that this index of harm
approach that we applied here as the test for OTIB-54, for at least the HTRE fundamental situation, that they agree, yes, this is a good way to come at the problem. Or maybe no, you really can't do that, there are too many other complicating factors.

And we would be the first to agree that that could happen if you start to actually run ORIGEN runs for these very specific cases.

But given it holds up more or less, one of the thoughts I had is given this bigger issue of all these reactors, high priority, medium, low priority, I would imagine, that these ORIGEN runs are not a walk in the park. These are complicated, very difficult runs taking a lot of resources.

And all I would offer is that there may be some way of a shortcut to try to say, listen, if it turns out OTIB-54 is not always claimant-favorable is there a way to say, listen, well one thing we can say is that when it's off
it could be off by a factor of less than two, except for this iodine issue that's brought up that might be a very special case.

So I guess what I'm trying to do here is to say there may be some innovative, simplifying, creative approach to attack this problem without having to run through all of these ORIGEN runs.

Now, I don't run ORIGEN, but I got the impression that it's extremely complex as applied to any particular real reactor and real operating circumstance. It might require a lot of resources.

And all I could offer up is that if there's a way to sort of scoping to see how far off -- first to see if the work we did holds water. We realize that we tried to do something pretty creative here.

And if it does there may be some ways in which to come at the problem that would help place a plausible upper bound, an adjustment
factor so to speak on OTIB-54 to accommodate these unusual reactors.

So I just throw that on the table as a think piece for us. Because I realize we're entering into a mode where these could be very resource-intensive investigations.

DR. TAULBEE: This is Tim. I certainly don't have any problem with us -- well, actually we'll get back to you on the index of harm comparison. We had not looked at that in great depth yet from that standpoint.

But I can tell you one quick comparison we can do is using your same index of harm is compare the OTIB-54 with the runs that we did for the Savannah River Site where we actually went through ORIGEN and developed a different set of factors for Savannah River to see if we've got -- if that possibly makes out the differences that we saw again with the iodine.

Does anyone hear a squeal on their phone?
DR. MAURO: I'm hearing some static.

I don't know if everyone else had the same problem.

MR. KATZ: I was hearing it too. It's gone away. Hopefully it's passed.

DR. TAULBEE: Okay. So, I guess at this point I'd say let us get back to you on that index of harm issue.

I can't agree more with you on the issue of ORIGEN being labor-intensive and resource-intensive. This is part of why we were trying to prioritize what the Work Group wanted us to look at kind of first high priority and which ones, and why we were trying to pare them down from that initial component because these are resource-intensive.

But we will look at this index of harm more closely and get back to you on that.

I do have a few questions going back up to Steve's presentation here. And that is on the LOFT where you all disagree.
I don't think we're actually in disagreement here. The issue is we do intend to look at LOFT. The question is whether it's under the SEC evaluation or under the TBD.

So, I really would like it to be put under a Site Profile issue and we will look at it at some point. But right now from an SEC standpoint we were wanting to exclude it.

It's not that we want it off the table completely, it's just for the SEC so that we can try and manage this a little better because of the resource intensity of doing such.

That was our point with number 2, the LOFT reactor.

DR. OSTROW: This is Steve. I agree with you. We don't care whether you do it for SEC or Site Profile, unless the Work Group cares.

But we agree with you on that.

DR. TAULBEE: Okay. Any questions from the Work Group on that?

MEMBER BEACH: None here.
DR. TAULBEE: Okay. With regard to SPERT --

MEMBER MELIUS: Excuse me, I had myself muted. Jim Melius.

I guess maybe backing up a little bit are any of these reactors significant SEC issues? In terms of when you combine how difficult they may be to model and the years involved of operation and significant population of people exposed.

DR. TAULBEE: This is Tim. My general impression is no from the standpoint of we can do the modeling and so we can make adjustments to the TBD if we see differences.

DR. MAURO: Jim, this is John Mauro. I don't entirely agree with that and let me explain why.

One of the reasons we did the TAN HTREs is to ask the question -- because the basic approach that's been adopted in TAN which of course is not part of the SEC issue, or is it I
believe being held in reserve, is that the idea being that, well, we could use this OTIB-54 approach.

And that was the reason we worked through this exercise is to say listen, can you do the OTIB-54 approach. Is it scientifically sound and claimant-favorable.

And the results are the results that we have here where we are seeing ratios of index of harms that's greater than one.

Now, does that mean that you cannot reconstruct the doses? I would say no, you can.

Of course you can always run ORIGEN and do the full-blown treatment of the problem.

But at the same time I just want to caution that if that is going to be the solution we're talking about something that might be quite overwhelming.

So, I'm not disagreeing. I just want to point out that taking that -- if we determine that my index of harm approach is valid, and that
the difference that we're seeing -- and they're not big for most organs as may have noticed, 1.2, 1.5.

The question of okay, we agree that OTIB-54 really is not always necessarily claimant-favorable by some factor of 20, 30, 40, 50 percent for different organs. Okay, we agree with that.

Now the question is what do you do about it. And if there is a plausible reasonable way of expeditiously going through the process of reconstructing doses, great.

But it's not apparent to me that there is. And I think that is a challenge if it does turn out that OTIB-54 doesn't really work for these unusual burnups.

So I just wanted to add that into the landscape of the issue we're dealing with.

MR. KATZ: John, just to respond a little bit to what you just said there. It's Ted.
Expeditious is not really a criterion for whether you decide, okay well, it's too much work so we're going to do an SEC instead. It's not really an option.

DR. MAURO: I agree. I guess I jumped the gun on that one. But I was just thinking about how are we going to do this. But you're absolutely right.

CHAIR SCHOFIELD: This is Phil. I do have to agree with one thing and that's that I'm more concerned about the fact that a lot of these -- I don't know how well the documentation is for some of these runs.

I mean, you used mixed fuel combinations out of their normal testing, and how this would affect the people that are there doing the operation.

DR. TAULBEE: So, this is Tim. That's what makes this quite complex is that this was the National Reactor Testing Station. So they did multiple different configurations.
And so what we've done, or what SC&A has done, as well as NIOSH, is we've gone through the reactors and looked at what is different from the reactors they were testing there versus what is covered in OTIB-54, the style of reactors, the type of fuel, et cetera.

And so what we're talking about here is really just the outliers, the ones that caused us some concern that those values in OTIB-54 may be different than what we saw at a particular area. Does that help answer your question?

CHAIR SCHOFIELD: Yes.

DR. OSTROW: This is Steve. Just following what Tim said, it's not only the outliers, but the outliers that we thought might have significant doses. Because they had a whole bunch of more reactors that were truly bizarre, but they were low power, short periods of time, et cetera, et cetera. And we didn't put those into high priority. Neither did NIOSH.

They're really strange reactors but we
didn't think they had any high potential for exposures to people for various reasons.

My question is where do we go next on this. We agreed to modeling reactors and looking at the high priority, and looking at this table I have, this multi-page table we agree with NIOSH in most of the cases which reactors to model.

So what's the next step? Does NIOSH can just go ahead and start modeling whatever they have their time on their schedule the reactors we agree on and the reactors we didn't agree on?

DR. TAULBEE: Let's -- if we can I'd like to discuss it because there's only two more -- or only really the SPERT reactors, that I wanted to ask you all about.

You're proposing that we model the worst case or what we believe to be the worst case of each of the four, is that correct? Did I understand that correctly?

DR. OSTROW: Yes. I think so. That
is what we're recommending. Because they really
operated fairly differently from each other.

And we're not convinced that you can
pick one worst case for all four tests unless
alternatively if NIOSH can justify picking one
case for all four reactors that's fine, we'll
look at that also.

DR. TAULBEE: Okay. Either way we're
looking at a large number of test runs from that
standpoint. It's not something that we'd just
kind of use best educated guess to pick one.

It's more of we would do some
preliminary type of ORIGEN runs and then kind of
honed in on, okay, this is having a bigger effect.
And that was what we were planning on doing, much
like what we were proposing for the EBR-II.

So it's not something -- or not EBR-
II, EBR-I -- where we believe it might be the
concerning core there that would be bounding. But
we'd perform some preliminary modeling to make
sure of that.
That's what we were kind of planning to do with SPERT as well, but only really report on one of them.

DR. OSTROW: Okay, I understand. I understand the procedure. I actually know how to run ORIGEN and have done it and understand how the whole thing works.

But your method -- all I'm asking then is if you do go through this and pick one reactor that whatever you deduce, point to it, document it. Show enough that we can actually take a look at it and say yes, NIOSH did it the right way.

DR. TAULBEE: Okay, sure. Absolutely.

Absolutely. Okay.

And the other one that I wanted to just briefly mention is you mention the BORAX ones for the BORAX-I, II and III with regards to the people who don't make it into the SEC.

I just wanted to clarify or to I guess in a sense let you know that we've designated the SEC due to an internal infeasibility in that we
believe these workers were monitored based upon some interviews and other documentation.

But we do not have data. It is incomplete. So we made it an SEC due to we know people do not have complete internal dosimetry records up through 1957.

So we really can't reconstruct their internal doses. If they have something then we will use it and we will apply it to 54, but we already know it's incomplete. So to do additional work there just doesn't seem fruitful in a sense.

DR. OSTROW: Okay, I understand and it sounds right. John Mauro, do you have a comment on that?

DR. MAURO: No, I can't add anything to that.

DR. OSTROW: Okay, so we'll -- your point's well taken.

DR. TAULBEE: Okay. Then the only other one that I have here is it looks like from
your TRA reactor, TRA slide 23, that you would like us to look at the MTR plutonium core.

DR. OSTROW: Yes, from what I understand about the MTR, I looked into it a lot.

It seems that the core configuration is the same physically, the same curved plates, the same strange cylindrical control mechanisms and all that, but with a different -- so basically we'd like you to take a look at the plutonium case.

DR. TAULBEE: Okay.

DR. OSTROW: Because that's different.

I didn't see -- looking at the OTIB-54 I didn't see where that would really fit in.

DR. TAULBEE: No, it doesn't. I think initially in our initial thoughts that's part of why we're looking at EBR-I separate from the EBR-II while they are different reactors, different styles.

But the other issue is the EBR-I had a plutonium core as well, but unfortunately it's not light water so you're looking at a fast
reactor versus slow. So we probably should look at both. We concur with you on that.

DR. OSTROW: Okay. That sounds like we agree now on what you're going to be looking at.

Do you have any idea about schedule for this?

DR. MAURO: Steve, before we jump to that I just want to make one point that I think we went through very fast. This business of highly enriched uranium not having the U-238, to a large degree, which means that in this respect the approach that's being adopted by these tables 5-22, 5-23 is grossly conservative because it predicts substantial quantities of plutonium-239 which I believe are really not going to be there because you don't have the 238 where it would grow in from.

So, we didn't really talk too much about that, but I think an entirely different strategy might need to be taken with regard to
these transuranics when you're dealing with fuel that is highly enriched.

I just wanted to remind everyone on that aspect of this analysis which is still like the flip side.

In that case I believe your strategy will substantively overestimate your doses.

DR. TAULBEE: This is Tim. We believe that to be the case, and that's the goal of OTIB-54 was to take these four different styles of reactors and one of them, the trigger reactor is high enriched uranium, just the scenario you're talking about, but combining it with the ATR which is highly enriched uranium.

But the Hanford inner reactor is of course plutonium production. So the goal of 54 is to create a massive envelope around them all. And so what we're really looking at is does something fall outside the envelope.

DR. OSTROW: Okay. So you have that covered. I guess I have to say I missed that,
that you basically have that circumstance covered in your current OTIB-54. Thanks for helping out.

DR. TAULBEE: Okay. So if I could just briefly recap here which ones that we are to look at and then I'll try to address schedule a little bit.

We will evaluate OMRE, PBF. With SPERT we will then go through and do kind of a sub-analysis of which one tends to be the most dominant -- not dominant but outlier in a sense and that's the one that we will pick to do the full evaluation.

We'll look at BORAX-IV, EBR, the core number 4 which is the plutonium one, EBR-II and the MTR with the plutonium core, the Phoenix core.

DR. OSTROW: That sounds like it to me, Tim. This is Steve.

DR. TAULBEE: Okay. All right, well, and now I'll try to address schedule a little bit here.
From one standpoint there's really good news here is that we may have a resource that can work on these in parallel with all of our other efforts. So that I need to get with the ORAU team more on and we'll be doing so tomorrow. And we'll be trying to build out the schedule. So I hope I'll be able to provide an update to the Work Group on some of the schedule now that we've got a priority set.

So I can't give you hard numbers right now, but I do want to let you know that it's not going to be dependent on something else I don't believe. So that's the really good news.

I just can't give you exact time periods right now because I don't know that potential resource's availability completely and what the time schedule would be.

But I did want to show the Work Group that this is something that I do think can be going on parallel with the burial grounds 83.14 that we'll be working on and the response to the
ANL air monitoring.

So I do think we can have three parallel efforts going on right now from this standpoint.

Mitch, am I overstating anything?

MR. FINDLEY: No, I don't think so.

Again, we're going to discuss it tomorrow so we can kind of work through the details of it at that time.

DR. TAULBEE: Okay.

SC&A Burial Grounds Report

MEMBER BEACH: So in terms of priorities if you cannot work on them in parallel the priorities are the burial grounds, 83.14, is that correct?

DR. TAULBEE: Yes, that would be our top priority for sure.

MEMBER MELIUS: This is Jim Melius again.

And then I think the earlier years of the burial grounds would also be a priority.
DR. Taulbee: The problem with the early years of the burial grounds is that the same 83.14 folks would be working on that.

Member Melius: I understand. So you would be doing this sequentially.

DR. Taulbee: Yes.

Member Melius: Okay. I guess my concern is -- well, you're going to talk tomorrow about -- so the ORAU staff availability resource issue.

But there's also a bigger resource issue in terms of overall budget available for this and other sites. It seems we keep running into that issue more and more. And I guess that's -- so your internal prioritization overall in the program.

I guess I'm still not convinced that -- and I don't know the resources involved in going into this, but it seems to me if they could be -- that they are a significant evaluation of reactors that we -- I don't see them as a
priority for the site.

If it's all the same resource and same people involved I think those are the last of the -- certainly after the burial grounds.

DR. TAULBEE: Understood.

MEMBER MELIUS: And I think the other thing that I guess I get concerned a little bit about in terms of how you prioritize the reactors is that -- which you've already taken into consideration in some of your responses is the whole issue, if we establish an SEC covering the site, the entire site for certain years then that may change your priorities in terms of which reactors to look at when and so forth.

But those are all hypotheticals. But I just sort of keep it in mind so that when we complain about getting something done at another site, or ask Stu about it we don't get the answer well, you guys all wanted the reactors done right away.

DR. TAULBEE: Understand. Okay.
MEMBER BEACH: Good point.

CHAIR SCHOFIELD: Sorry to change the subject here, but I was wondering if people need a short break before we continue or not.

MEMBER BEACH: What's our time frame, Ted?

MEMBER MELIUS: Ted has morphed into a dog it sounds like.

MR. KATZ: No, that wasn't me, but my phone keeps locking me out after I put my code in just to get the phone open to unmute it. Sorry.

Anyway, the time frame is really -- we set this meeting at 10 o'clock instead of the normal 10:30 because some Board member or two had at some point conflicts later today.

So it's really up to the Board members. You can run it longer if it works for the Board members. We can break and reconvene after lunch too at some point if people start to get hungry. I have no constraints.

MEMBER MELIUS: What's the time frame
for what's left to do?

MR. KATZ: Right. So there's two items. They're both SC&A items. I don't know how long they take to present. One I think might be Joe's.

MEMBER MELIUS: I don't think it makes sense to do the -- I mean, we may need a short update from Joe on the burial grounds, but I don't think NIOSH is ready to --

MR. KATZ: Right.

DR. TAULBEE: We are not ready to respond. That is correct.

MEMBER MELIUS: And the same on -- I don't know where you are with the ANL-West monitoring in terms of a response.

DR. TAULBEE: Same with that one.

MEMBER MELIUS: Okay.

MR. FITZGERALD: I'd say 5 or 10 minutes, Jim, on mine.

MEMBER MELIUS: Yes.

MR. KATZ: So then if it's that brief
and you want to hear a short presentation from Joe then we can adjourn after that it sounds like.

MEMBER BEACH: That sounds good.

CHAIR SCHOFIELD: Let's go ahead and continue. It doesn't sound like it will take much longer here.

MR. FITZGERALD: Yes. You have the report and in fact I think pretty detailed.

I think we, Tim, NIOSH and SC&A agreed about a year, a year and a half ago that even though I think there was a conclusion in the first ER that there was sufficient data and programmatic considerations that NIOSH concluded it could dose reconstruct with sufficient accuracy.

I think there was the desire to supplement the information that was available. Most of the records for the early years of the burial grounds were fairly thin, I think that's safe to say.
And we wanted to go out and do a fairly extensive round of interviews with workers that worked at the burial grounds which we did. I lost count, but we probably talked to specific to the burial grounds probably 20 or 30 if not more of those workers trying to piece together something that again is not really well-documented in terms of practices and the history of that site.

And we agreed to report. I'm not going to go ahead and present that in terms of the findings, but I think it's safe to say our conclusion after that year, year and a half is that we find ourselves in disagreement with some of the basic conclusions or tenets that are in the ER for that period. This is '52 to '70.

Granted it's a weight of evidence type of deliberation and I fully appreciate one has to consider availability of data, the programmatic issues.

But again we find some real concerns
in that.

Now, saying that we have not been able to pin down at this point in time what exact -- I think Tim alluded to this -- what exact data. And it's referred to in the latest ER as data in hand, but the bioassay information and maybe air sampling, we don't know.

So in terms of any conclusions one could make as far as the approach we don't know what the specific dose reconstruction approach will be.

So, it's sort of saying well, okay, we can probably paint around that issue and look at the weight of evidence as we have it. And we have concerns over what we do have.

But there can't be a real hard-edged I think conclusion from our standpoint for the Work Group until we are able to look at what Tim's referring to in terms of the information.

And a lot of this was collected over the past year. So we have yet to do that.
I guess in terms of how this might inform the 83.14, I would just kind of emphasize that certainly as NIOSH goes through their look for the '70 to '77 period I think a lot of the issues, the programmatic issues for one, the monitoring issues for another, and certainly the practices themselves did not shift dramatically even though the operations did.

They were certainly retrieving rather than dumping and burying, but a lot of those basic health physics practices were very similar. It didn't change from December of '70 to January of '71. So I would certainly emphasize that point.

And in terms of looking at the monitoring information, I think the key from what we were able to look at is needing to fit the monitoring that was being done to the actual activity on the ground.

I mean, yes, they had air sampling going on, but they also had workers inside the
pit cleaning up after spills. And they certainly weren't being monitored in the same way as somebody on the edge of a pit or a trench.

The same thing goes for the special bioassays. We talked to some of the former workers and it was pretty clear that this whole notion of drums breaking open and having contents spilled and having to clean up the kind of contamination you would get when an equipment operator buries contaminated soil as overburden over drums and containers, and you're dealing with resuspension, the kind of -- those weren't necessarily subject to special bioassays.

So this whole notion that you had special bioassays when you had "events." Well, these contaminations were so routine they weren't considered events. You would not have had any bioassays that would fit the kind of exposures they were experiencing.

So I would just encourage in this 83.14 that NIOSH look closely at some of these
activities that predated '70 but certainly continued, and to look at whether or not the monitoring truly and effectively fit the activity at hand.

And from a programmatic standpoint, I think we tried to document very clearly, and it's all there in the report, that so-called defense-in-depth I think is perhaps overstated for the burial grounds.

Certainly I've heard that term for reactor safety, but for the burial grounds it sort of evolved from a municipal landfill type of approach to something a little better than that.

But clearly there were some real questions about to what extent the radiological controls were comprehensive, thorough, and whether the monitoring was done as consistently or not.

And a lot of that wasn't remedied until the mid-seventies. So certainly a lot of that has to be addressed in the context of the
83.14.

I think that's all I'm going to say at this point. I think it's pretty well laid out. We tried to be complete. And I know Tim and his staff were along for a lot of these interviews. They heard the same things we did.

So, certainly I know they're going to take a hard look when they go through the 83.14. That's it.

MEMBER MELIUS: You left us speechless except for the dog.

MR. FITZGERALD: The dog likes it.

MEMBER MELIUS: The dog likes it.

MEMBER BEACH: I think that's Phil's dog.

MEMBER MELIUS: Phil, is that your dog? Phil's on mute, the dog's not.

MEMBER BEACH: Okay, maybe it's not.

CHAIR SCHOFIELD: Yes, that was mine.

MR. KATZ: Thanks, Joe. I think that will be useful actually for review.
MEMBER MELIUS: Yes.

MR. KATZ: So with that, Phil, I think unless you have something else, or Board members have something else I think we can adjourn and thank everybody for all the hard work that went into preparing for this.

MEMBER BEACH: So, and I was wondering on the last report, on the ANL-West monitoring, is there anything that needs to be said on that, or we just hold off for the next meeting?

MR. BARTON: Yes, Josie, this is Bob. I put that report together and actually it was briefly discussed back in the August 2016 meeting. I think I had four and a half minutes to try and go through it. So, when we were kind of putting the materials together for this meeting, I had offered it up as something that's still yet to be discussed.

But at the same time I think I heard Tim say that there's not really a response ready
from NIOSH's group. So I'm not sure if it would be all that fruitful for me to go through the presentation again, maybe in a little bit longer and more detail, if NIOSH hasn't had a chance to really sit down with it.

Do I have that correct, Tim? It's sort of still in the queue?

DR. TAULBEE: Yes, you're correct. It is in the queue and on our radar, but we have not worked on it. And so with the other things that are going on, I would propose that we kind of table this at this time, or put it to the side for a future meeting.

MR. BARTON: That's fine with me. I guess one other thing if we're going to adjourn shortly, I wanted to inform the Work Group that another piece of the puzzle that we sort of researched in parallel with the burial grounds work that Joe just described was exposures at the CPP prior to 1963, so prior to the currently proposed SEC period.
And that report has gone through SC&A internal review. Right now it's with our tech editor who's fixing all my horrible grammar. And then after that, I imagine it will have to go to DOE. But that is certainly in the pipeline and you all should be seeing that fairly soon.

CHAIR SCHOFIELD: Thanks for that heads up, Bob.

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

CHAIR SCHOFIELD: Yes, I am.

MR. KATZ: Okay. So time to adjourn?

CHAIR SCHOFIELD: Unless anybody else has anything I think we will adjourn at this point.

MR. KATZ: Great. Well, thanks everybody.

MEMBER BEACH: Before we adjourn, I was wondering, should we set up something tentatively just to discuss that 83.14, or are we just going to wait?

MR. KATZ: Well, Josie, I was thinking
about that. Why don't we just wait a little bit for more certainty from Tim in terms of the time frame.

The more time before the Board meeting the better, so I'd like to give Tim a little bit of time to make more progress, and then absolutely I'll schedule even if we may not be able to use it I'll schedule an INL Work Group meeting for before the August Board meeting so we have that opportunity.

MEMBER BEACH: Okay, thanks.

DR. TAULBEE: And again, this is the 83.14 for CPP.

MEMBER BEACH: Correct.

MR. KATZ: So thanks, Josie.

MEMBER MELIUS: We can only do it once with the agenda.

Adjourn

MR. KATZ: Okay.

MEMBER BEACH: Bye everyone.

(Whereupon, the above-entitled matter
went off the record at 12:22 p.m.)