U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL
SAFETY AND HEALTH
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ADVISORY BOARD ON RADIATION
WORKER HEALTH
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KANSAS CITY PLANT WORK GROUP
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MONDAY
OCTOBER 26, 2015
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The Work Group convened via teleconference at 1:00 p.m. Eastern Time, Josie Beach, Chair, presiding.

PRESENT:

JOSIE BEACH, Chair
BRADLEY P. CLAWSON, Member
JAMES E. LOCKEY, Member
JOHN W. POSTON, Member
LORETTA R. VALERIO, Member
ALSO PRESENT:

TED KATZ, Designated Federal Official
RON BUCHANAN, SC&A
PETE DARNELL, DCAS
JOE FITZGERALD, SC&A
JOSH KINMAN, DCAS
WAYNE KNOX, Petitioner
JENNY LIN, HHS
JOYCE LIPSZTEIN, SC&A
JOHN MAURO, SC&A
PAT MCCLOSKEY, ORAU Team
JIM NETON, DCAS
MUTTY SHARFI, ORAU Team
JOHN STIVER, SC&A
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ADJOURN
MR. KATZ: So good afternoon, everybody. This is the Advisory Board on Radiation and Worker Health, the Kansas City Plant Work Group.

Let's get rolling with the roll call, not to pun. Since we're speaking about a sight for Board Members and agency-related staff, please speak to conflict of interest. And let's get going with Board Members first, beginning with the Chair.

(Roll call.)

Okay. Just to note, there is a comment period for Petitioners, and I have statements from the two Petitioners to read into the record when we get to that point.

Okay, materials. Now last I looked, there were no materials posted other than the agenda. Though, I'm not sure --

CHAIR BEACH: That's correct.

MR. KATZ: -- if that's still the case, but I looked this morning and that was the case.
But if somebody wants to see the agenda, they can see it there. It's pretty simple.

And otherwise, just let me ask everyone to mute their phones except when you're addressing the group. Press *6 if you don't have a mute button and then *6 again to take your phone off of mute.

And please, nobody put the phone call on hold at any point. But hang up and dial back in if you need to leave for a period. And, Josie, it's your meeting.

CHAIR BEACH: Okay. Thank you. We do have an agenda posted. We'll just systematically go through it. There are some documents that I might mention once we get to those topics. The first couple are some informational pieces with no memos or White Papers associated with it.

And it looks like NIOSH is going to talk to us about some new personnel at Kansas City Plant and then some updated information on mag-thorium ops. So we'll go ahead and let you do that. Pete, if you're going to do that.

MR. DARNELL: Actually, Josie, I've
asked Pat to do that since, he was responsible.

CHAIR BEACH: Oh, Pat. Okay.

MR. MCCLOSKEY: Okay, hi. This is Pat McCloskey.

CHAIR BEACH: Good morning, Pat.

MR. MCCLOSKEY: Good morning. Really afternoon for me.

CHAIR BEACH: Oh, okay.

MR. MCCLOSKEY: So prior, we did some interviews two weeks ago on the phone with a few people we missed when we were doing a site visit there. And prior to setting that up, I spoke with Lynn Ayers about, you know, finding out how to get that set up. And there was some back and forth.

And in the end, she said, you know, the whole key to this was figuring out who the players were, knowing who to talk to. And so, with that in mind, I thought, well, maybe we should share with everyone what we know.

So Brent Nasca has been a health physicist there since '89. Well, actually, no. He was there in '90. He got there after the
promethium incident.

But he's moved on to sunnier pastures in Florida. Still with Honeywell. It's not clear whether or not we'll having remaining access to him for questions, but he provided us with a lot of information.

His new replacement as a health physicist there is a guy by the name of Greg Wolf. We've talked to him on the phone a couple times. He comes from their IH group. Has been there at the site for a while. A couple years now. That's health physics.

Some of you might remember their legal department. They had Alice Lund for a while, and then it became Stacy Eide. And she's moved on and now it's Karen Neland is the legal representative at the site now.

And so they're the people that you talk to to set up a visit. And Karen's been there for a while and knows the ropes pretty well. She's who coordinated our last interview two weeks ago.

Other than that, Nelson's already hired
his replacement, Nelson Beard. He's the data classifier there. Gets us information pretty quick, but he's hired his replacement and it's not sure how much longer he'll be around.

So that's all I really wanted to share with you guys about new personnel at the site.

CHAIR BEACH: Okay. Thank you.

MR. MCCLOSKEY: Sure.

CHAIR BEACH: And then if you want to move on to the second item. Unless there's any questions or comments, of course, on that first? Hearing none, so do you have some updated information for us on the mag-thorium ops?

MR. MCCLOSKEY: Yes. Since our July meeting, we got a memo from SC&A and the Work Group, questioning the suspension of magnesium thorium operations at the site.

CHAIR BEACH: Right.

MR. MCCLOSKEY: And so --

CHAIR BEACH: Oh, go ahead.

MR. MCCLOSKEY: And so, Pete and Mutty and I had a phone call. We're trying to do some
brainstorming to see if there's, you know, what else we could try to try to pin this down a little bit better.

And so what we thought of, instead of continuing to ask them for all their magnesium thorium information, we thought, well, in our records we have part numbers, descriptions of parts and materials that are made out of magnesium thorium, such as coupling rings, spring forgings.

And so I wanted to have a classified call so that I could identify maybe weapons systems or any special projects that these parts belong to. And then ask for records on those particular parts or weapons systems, and start to understand when magnesium thorium, the material, is moving through the plant that way.

And so it turns out none of the information was classified. We didn't get into any classified discussions as part of that, so.

But we had some drawings from Sandia. We give them the exact drawing number, Sandia order numbers. So from their procurement records, we
wanted to see if, you know, you could show when part number 46137, for example, came to the site and was worked at the site.

Then we had some vendor names. Continental Metals, Ladish, Pacific Division of Ladish Company. And we even had some purchase order numbers.

And so, at the end of that conversation which occurred September 16, September 17, sent the email to Tara. Now that I know none of it was classified. Tara Burgess, there at the Kansas City Plant is the Reference Manager. And she did a key word search for all those items and did not come back with any information.

So what we were hoping to do is make a site visit before today's meeting and retrieve whatever additional data we could find and speak to some of these new people and meet the new health physicist, but that didn't come to fruition.

So I just wanted to share with the Board our most recent attempt to, I mean with the worker group there, our most recent attempt to pin down
these dates for magnesium thorium machine ops.

CHAIR BEACH: Okay. Did you guys take any notes from that meeting, by any chance?

MR. MCCLOSKEY: Yes, I have some notes.

CHAIR BEACH: That's shareable or I don't if SC&A would be interested in that or not, just --

MR. MCCLOSKEY: Yes, I can send them your way.

CHAIR BEACH: Okay. Anybody have any questions on that for Pat? Okay. Anybody on mute?

MR. FITZGERALD: Well, I was just going to ask Pat -- this is Joe. Is it still planned to perhaps follow up on this or is it kind of put aside?

MR. MCCLOSKEY: We're going to continue brainstorming on what we can do to continue to better understand these limited operations of magnesium thorium.

That list, this list, of key word search items that we presented to the site in September, there's no plan that I know of to reformat these words some other way and resubmit them.
I mean, we have, we're going to talk about this with the validation of the database and some of the records. You know, we see some need to ask for some dosimetry records that are questionable legibility and so, you know, if we go back there for that reason, maybe we could poke around at this some. But, no simple answer, Joe, nothing in the works at the moment.

DR. NETON: You guys put together this memo, right, in September that was sent out to the Working Group which pretty much outlined our current position on this period. Did the Working Group actually get this and --

MR. MCCLOSKEY: Yes.

CHAIR BEACH: Yes. It came out on the 18th, correct?

DR. NETON: That's correct.

MR. MCCLOSKEY: That's correct.

DR. NETON: I think that summarizes where we currently are, I think, on this issue.

MR. MCCLOSKEY: Sure.

DR. NETON: I mean, the other avenue
that they were pursuing was just, as we said sort of in the memo, that what we would continue to, you know, research this. If anything changes, we'd be happy to modify it.

But at this point, I think we believe we're pretty much of the opinion that, you know, we're going to move forward with this as it is.

MR. DARNELL: Right. I don't believe there's anything else we can think of right now to search for, the search terms. Especially since the last set that we had came up empty for results.

We've asked Mark Rolfes, who's looked into different programs and part numbers for all the different programs that could have had magnesium thorium in them. He used those as search terms and nothing came up at Kansas City.

CHAIR BEACH: Yes. And I'm going to break in just for a minute. This is Josie. This is part of our fourth line item discussion and I'm wondering if it makes more sense to go ahead and have this discussion now instead of after the sample dose reconstructions. What do you all
think about that?

MR. DARNELL: Well, it works for me.

It's Pete Darnell.

MEMBER CLAWSON: I'd like to kind of review it right now, Josie, if we could.

CHAIR BEACH: Okay. So what I had kind of outlined was there was three or, yes, three different memos that went out. The earliest one came from NIOSH, I believe, on July 7th. We got that just a week before our July 16th, 17th meeting. So SC&A gave us a real quick shot of what they thought of that paper.

And then, of course, we got the August 14th paper from SC&A. So you guys should all have that and then the memo came out on the 18th. And I believe the only item up for discussion is those years. Let's see, 1963 to 1969 where they -- we haven't proved there wasn't any mag-thorium operations going and we haven't proven there was. So it's a -- everything else I believe was agreed upon on mag-thorium. Is that correct, Joe?

MR. FITZGERALD: Yes. I think I think
that's a pretty good characterization.

CHAIR BEACH: Okay. So I don't -- I think we have NIOSH's stance and we have SC&A's stance. Unless either one of you want to expound on anything, it's really a Work Group decision and discussion on what you think about those years that aren't covered. So, Joe or --

MEMBER CLAWSON: This is Brad. Can you refresh my memory on the years that we're looking at? It was just a few years, wasn't it?

CHAIR BEACH: Yes. It's lacking mag-thorium operation data for 1963 to 1969. And it's not for lack of looking. I know NIOSH has looked and SC&A has looked.

MR. MCCLOSKEY: Josie?

CHAIR BEACH: Yes?

MR. MCCLOSKEY: The suspension goes through August --

CHAIR BEACH: This is Pat? Okay.

MR. MCCLOSKEY: Yes, this is Pat. I'm sorry.

CHAIR BEACH: Okay.
MR. MCCLOSKEY: The suspension goes through August 27th of 1970. So the suspended period, we're saying, is from April 1, 1963, through August 27, 1970.

CHAIR BEACH: Okay. Yes. I took it to the end of '69, so.

MR. MCCLOSKEY: It goes into '70, though.

CHAIR BEACH: And then what was the date in '70? I'm sorry.

MR. MCCLOSKEY: August 27, 1970.

CHAIR BEACH: Okay. All right. Thanks for clearing that up, Pat. So those are the years we are talking about. I don't know. Joe, do you have anything, or Pete, to --

MR. DARNELL: Right. This is Pete. As far as I'm concerned, I mean, that's pretty much where we are with mag-thorium operations. Again, you've been through the searches that we've discussed already. With the extra searches that Pat did for the last classified phone call and --

CHAIR BEACH: That's right.
MR. DARNELL: -- we're just not finding anything further to put the date in there. I would like to put more dates of work in there. And I would like to point out, and I know this is a separate line item in the agenda, but the example DR also included the suspension of operations from --

CHAIR BEACH: Right.

MR. DARNELL: -- the period through August 27th, '70. And we basically had no comments from the Work Group on the example DRs. So I think we should --

CHAIR BEACH: So I think everybody was waiting for this call.

MR. DARNELL: Okay.

CHAIR BEACH: Potentially.

MR. FITZGERALD: Yes. Let me just add that that's true on the examples, but, you know, we understand that the Evaluation Report did conclude that there wasn't any clear evidence of mag-thorium operations in that period, '63 to August of '70.
And there were not really evidence, but there was some indications that perhaps there might have been some operations and that was the basis for our wanting to see if there was any evidence that could be had from the records that we were looking at on site at Kansas City.

And we went through quite a bit of searching, as you pointed out, Josie. And after several attempts, we could not find any positive evidence of mag-thorium operations for those years.

And, you know, there might be some inferences. There might be some operational suggestions. But there's those that go the other way, as well. So, you know, I would say it's just inconclusive.

And since we did not establish any, you know, any evidence, you know, I think the ER stands as it is. I mean, we haven't been able to find anything otherwise. So that's kind of where we are. I mean, certainly a lot of effort went into it.
CHAIR BEACH: Right. And I know Joyce is on the line. Joyce, do you have anything to add or?

DR. LIPSZTEIN: No. I just, I think the discussion now is which is what is claimant favorable. There is no indication that mag-thorium machining was suspended in the period of time '63 to 1970.

Is this claimant favorable to apply the limits during this period of time or just say there was no machining during this period of time? So is a question.

I personally think it's claimant favorable to apply for the whole period, as we don't have any document indicating that the mag-thorium machining was suspended during this period of time. But I think it's a decision of the Work Group.

CHAIR BEACH: Right.

MR. DARNELL: I think it's -- this is Pete. And it's interesting that you're, the way you're characterizing that there's no evidence that it was suspended. There's no evidence that
it was operating either. And --

CHAIR BEACH: Yes.

MR. DARNELL: -- claimant favorability
doesn't necessarily mean you add a dose where there
would be no dose. And since we can't claim that
there was operations there, we can't claim that
operations were started, we can't claim that
they're stopped. We just can't claim there was
operations.

It's not a claimant favorability-type
decision to add a dose during this period. It's
whether -- what we have to decide is whether it
occurred or whether it didn't. If it occurred,
then we already the bounding dose estimates to do
and we would put that dose on there. If it didn't
occur, it's not claimant favorable just to add
dose.

MEMBER CLAWSON: Well, we could have
real good discussion about that then. We could go
on for years. This is Brad. We could go on,
because there's, you're right, Pete, there's
nothing to say that it happened and it didn't
happen. So I guess it comes back to kind of a
stalemate.

But also, too, we've done this in many
other cases. But where we're not completely sure,
we always go favorability. What are we looking at
as a dose-wise for a person for this mag-thorium?
It's quite relatively low, isn't it?

DR. LIPSZTEIN: No, it's very high.

MEMBER CLAWSON: Is it? What is it?

DR. LIPSZTEIN: Yes, it's high. It's
high. I, well, NIOSH has calculated the DR example
and I did it a little bit for SC&A. I did it for
SC&A in a little bit different way of using the
ratio of thorium-232 to U-238.

But we are looking at very high doses.
On my way of calculation, which is one, we are
looking at very high doses. For each year of work,
for example, for 20 years committed equivalent dose
to bone surface is about 136 rem per year. Per year
of work. So it's very high doses.

DR. NETON: Yes, this is Jim. I think
there's more evidence supporting that it didn't
happen than we're acknowledging here.

I mean, there is, I think they went through and did careful evaluation and inventory of thorium. It wasn't there. There are no procedures or monitoring data during this period.

When thorium was, we know when it was handled there were pretty good records of that. It just doesn't seem consistent for me that they would just all of sudden drop the monitoring program completely and have no records available for it. And especially in light of the fact that there was no thorium inventory.

I just think that the weight of the evidence here more strongly supports the fact that this didn't occur. It's not a claimant favorable thing where we just don't know. I think there's more evidence than not indicating that it didn't occur. You've really got to look at the whole picture.

DR. MAURO: Jim, this John Mauro. In your record review, starting August, 1970, do you see an abrupt change in the records indicating a
start up again of thorium work?

   DR. NETON: I have to rely on Pat for that.

   DR. MAURO: Because that would be interesting to see, you know, if all of a sudden that shows up. If that's when thorium work starts again. I presume that's what you're saying.

   MEMBER LOCKEY: Right.

   DR. LIPSZTEIN: But there was no monitoring for thorium during all this period. I think we are basing on the inventory for the years. I think that's how it was based. It appears that's work off of mag-thorium machining. So --

   MR. MCCLOSKEY: Joyce --

   DR. LIPSZTEIN: -- it's not like -- yes?

   MR. MCCLOSKEY: Oh, I'm sorry. You can finish. This is Pat.

   DR. LIPSZTEIN: No, no. It's okay. I'm finished.

   MR. MCCLOSKEY: Oh. I was just going to say, as far as no records for magnesium thorium
or -- all of a sudden, I'm hearing a lot of static.

CHAIR BEACH: It's your phone.

MR. MCCLOSKEY: Okay. I'll see what I can do to fix that. We did retrieve those medical records recently, showing at what time someone was entered into the magnesium thorium program. They had to have an exam. A physical. And so, we do have that. But we don't have urinalysis indicating, like -- those sort of records.

As far as the question about did you see a large numbers of records indicating a 1970 start up again, we don't see a lot of magnesium thorium records, period. It's just such a small scale operation. So we just rely on the ones we've cited and referenced, suggesting that that's where we see ops starting again. I hope that answers the question.

MEMBER LOCKEY: This is Jim Lockey. I was going to --

DR. NETON: Well, Pat, it start up again after '70, is that correct?

MR. MCCLOSKEY: Yes, sir.
DR. NETON: Yes. So that's my point is, you know, prior to 1960 monitoring and after 1970, but nothing in the interim, which kind of would be suspect. I mean, how would you, with no inventory, you know, why would you be monitoring people. It just seems to fit properly.

MR. DARNELL: Somebody's breathing into the phone really heavily. If you could stop that.

MR. KATZ: Well, don't stop breathing. Just mute your phone.

MEMBER LOCKEY: This is Jim Lockey. Do you know what the personnel level goes to after August of 1970? It was reduced to two part-time personnel during the '64 to '70 frame and then when they restarted, do you know what the personnel went up to? Does anybody know?

MR. MCCLOSKEY: This is Pat. We recently retrieved those medical records that have who had, the number of people that had physicals and were allowed to work in the program. So I don't have that exact number in front of me, Jim, but I
think we could pull that together.

MEMBER LOCKEY: I mean, was it five, was it - I'm just trying to get a handle on -- any idea at all? A number?

MR. MCCLOSKEY: Oh, I would guess near 20.

MEMBER LOCKEY: 20. So --

MR. DARNELL: It was enough to be significant for us to see that the operation had to have restarted.

MEMBER LOCKEY: Had to restart it?

So, okay. So I guess I was trying to follow up on, if they went down to two part-time people, it doesn't necessarily mean it was discontinued completely. But there's certainly a major change during that time frame. And then when they restarted it, there was a marked influx of new personnel into that area.

MR. MCCLOSKEY: Correct.

MEMBER LOCKEY: Okay.

CHAIR BEACH: Yes, that's a -- Loretta, do you have any questions or comments?
MEMBER VALERIO: Can you hear me now?

CHAIR BEACH: Yes, yes.

MEMBER VALERIO: Okay. Well, I was just trying to clarify. The retrieval of these medical records that Pat's talking about, these are records that they retrieved recently regarding people who worked with this operation after 1970, is that correct?

MR. DARNELL: Well, this is Pete. Actually, no. We collected medical records on everybody that we could find that could have been a radiological worker.

MEMBER VALERIO: Okay.

MR. DARNELL: It included the thorium workers, but it included people that worked uranium in Department 20, the old DU operation -- everybody that we could collect.

MEMBER VALERIO: So all labor categories were included in those records? Laborers, custodians, all of them?

MR. DARNELL: You know, that I can't -- I don't have that off the top of my head. Pat, do
you know?

DR. MAURO: This is John Mauro again. You know, I've been reading, you know, the transcripts and the reports, and I understand there's a lot of language which are what I would call weight of evidence. A language regarding the time period where it would appear that there was certainly a drop or a stoppage of mag-thorium operations.

What it is, though, was, I was actually for a step function change, the kind of question I asked this before. That is, you know, we see this, this, this and this up to 1963. Then all of a sudden we don't see that anymore. And then we can start to see this, this and this starting in August, 1970.

And I didn't, I have to admit, that in reading the material, that didn't jump out at me. But certainly I understand the arguments you are making, the, what you say, the metrics that you looked at for that window of '63 to '70, and your arguments.
But it was not within the context of the other information you had, that sort of bookend, that time period that shows that, yes, there really seems to be some type of change here that was substantive.

And therefore, the weight of evidence is strong, that if the argument that you're making. I didn't get that takeaway. Not that I, you know, read it that carefully, but it didn't jump out at me.

MR. DARNELL: John, this is Pete Darnell again. I think you're correct in stating it that way. The problem lies not in our doing searches or the due diligence, it lies in the record keeping that Kansas City has.

In reality, we've given more data on their records so that they can make their records retrievable than they had when we went there. We certainly did not hit every single box of records that they have on site. But I would not say what we collected everything that we probably, that you expect to be available, say, if you were looking
at any records within the system that Idaho versus
Kansas City.

You just can't find all of the type of
information that you're looking for, which is why
we have to rely more so on what did you see, what
don't you see in the dosimetry files that were kept,
because those, the training and dosimetry that were
required for radioactive work was very good at this
site. The remainder of it, it was difficult to
wade through.

MR. MCCLOSKEY: And some of the
interviews from former workers corroborate a
suspension, I would say.

MR. DARNELL: And that's true, too.

CHAIR BEACH: Okay. So any other
comments on this or questions for NIOSH or SC&A?
I have to say that for, this is Issue 13, the
mag-thorium issue, we do have agreement on all
areas except for these dates.

And I guess I'm -- I was coming, I came
into this meeting thinking we needed we needed
claimant favorability, not realizing that that
dose would be as high as Joyce had pointed out.

    I'm uncomfortable with saying there was nothing going on, but I know we've done due diligence in looking for evidence and continue to do that. So I guess I'm asking the Work Group, how do we move forward with this? Do we close it?

    DR. NETON: Josie, this is Jim. I wonder if I might ask a question? So it seems to me there is agreement that if this were to be added for dose reconstruction, that we have a method of bounding this period. Is that correct?

    CHAIR BEACH: Well, I believe it's in our next topic.

    MR. FITZGERALD: I think that's correct.

    DR. NETON: That's what I'm saying is, so if that's true, then is really an SEC issue at this point? It's a matter of deciding whether the dose is added, not whether we can reconstruct it or not. So does that need to be decided before recommendation and the SEC can move forward?

    CHAIR BEACH: Well, I guess for me --
DR. NETON: Or has to be decided?

CHAIR BEACH: -- if you can't decide on those years, then that is still an SEC issue. Isn't that correct?

DR. NETON: Well, I mean, we've agreed that could bound it if were to be added. And so I guess first question that I asked was could we bound it and the answer I heard was yes.

That being said, essentially it's a decision of whether the profile would reconstruct those doses or not. And that doesn't need to be decided necessarily, at least in my opinion, to make a recommendation one way or the other on adding Kansas City as an active part -- to the SEC. I mean --

CHAIR BEACH: Okay.

DR. NETON: Am I wrong, or? I don't know. It seems clear to me.

MR. FITZGERALD: I would tend to agree with that. And actually, I think the notion here is research, to date, has not uncovered any positive evidence, but I would say that the notion,
and this is what was in NIOSH's memo, that that research would continue as possible. And if anything does, you know, any new information does come to the fore, that would be reflected, which I think is reasonable at this point.

It is difficult to actually identify specific information like this at Kansas City and it's been tried several different ways. But it's not to say that we might not be able to identify some information in the future.

MR. DARNELL: One other thing that we need to remember with -- the Kansas City record keeping department's very good is the training and dosimetry requirements to get out a radiological project for almost every worker that we found to look to see and verify that had either specific training, medical monitoring, or dosimetry requirements to be on that project.

And even during this period that we're discussing of whether or not there were operations, it would be reflected in those medical records that we collect on the workers. And then, to that
point, the dose would be calculated regardless of whether we make the decision or not during the operation suspension period.

CHAIR BEACH: Okay. Thank you, Pete. Anything else on this?

DR. LIPSZTEIN: Yes. It's not exactly on the spirit of time, but also on the example of the DR calculation. Is this the time to speak about it? Or am I --

CHAIR BEACH: We're going to get to that. I guess we can get to that discussion and then come back to closing this item or leaving it open. Does that seem reasonable?

MR. MCCLOSKEY: Well, why don't finish talking about the dose reconstructions and we'll close both issues at the end of that, since they're both --

CHAIR BEACH: Yes.

MR. MCCLOSKEY: -- so closely related.

CHAIR BEACH: That's kind of what I was thinking, too. So yes, Joyce, if you want to go ahead and start on that. Has everybody seen the
examples? Have a copy of it? It was sent out on September 16th and that was from NIOSH and then Ken, or SC&A sent out a memo on October, in October. So if you have those two items or two documents. And, Joyce, go ahead, if you'd like.

DR. LIPSZTEIN: Yes, I have some things that, to talk about the dose reconstruction, the way it was done or from which I understood it was done. It was calculated a dose for someone that used to work in the period of '61 to '63 and then '70 to '76, using the limits.

And the way it's, well, it is a summary the way the dose was calculated. So we had to get how it was calculated. But anyway, it was pointed out in the documents before from NIOSH that for Type M thorium then you would use the ratio of .19, thorium-228 to thorium-232. And it was used equilibrium. And if you used .19, you get a higher dose to the bone surface, to all the organs inside the body.

And then if you want to calculate the longer dose it's better to calculate this Type S
and then equilibrium. So this was not used in the DR examples, so I think the way the dose should be calculated should be the reviewed according to previous documents, which was agreed in previous documents. Did you understand me now?

CHAIR BEACH: Yes. I think everybody's just digesting.

DR. LIPSZTEIN: Okay. So it's just the way the dose is calculated using Type M or Type S and the equilibrium ratio of thorium-232 to thorium-228 and radium-224. And it was agreed before that if for organs like bone source-based, it should be used a ratio of .19 and it can even, just for lung one Type S thorium is used. And this is not the way the example was done.

DR. MAURO: Joyce, this is John Mauro and I apologize. The magic number, the .19, I have to admit, I don't recall why we zeroed in on that as being the appropriate ratio. Could you just give us a 30-second sound bite on that?

DR. LIPSZTEIN: It was agreed because this was a triple separation thorium. And we both
agreed, NIOSH and SC&A.

DR. MAURO: Okay, thank you.

CHAIR BEACH: Okay. I guess we're going to look to NIOSH to respond to Joyce.

DR. NETON: Oh, well, this is Jim.

CHAIR BEACH: Or Jim.

DR. NETON: I've lost my thread on how we came to that agreement, but I do understand where the .9 comes from. What you're saying though, what I hear, is that the intakes themselves are correct. It's just how we processed it after we assigned an intake.

DR. LIPSZTEIN: Yes.

DR. NETON: And we, unless Mutty or someone on the phone can, you know, provide a reason why we didn't do that, I think we just have to go back and look at it. I think it's a matter of just --

MR. SHARFI: I think the concept, the triple separate, was an association with whole body counts because of the lead and when you are starting to look at the other peaks in a whole body count
or a test count. The triple separate became the more claimant favorable assumption based on when you're drawing the thorium intake from the later peaks. I'm not sure if that is true that there was an agreement for all thorium intakes that are based on, say, air sampling.

DR. NETON: This came up at another site just recently. All I can say is, Joyce, we would have to look at that and verify, you know --

DR. LIPSZTEIN: Jim?

DR. NETON: Yes.

DR. LIPSZTEIN: Yes. Look at your previous documents. We all agreed on that. There was a lot of those --

DR. NETON: You mean separated for this site?

DR. LIPSZTEIN: Yes, yes. It was NIOSH proposal and we agreed on it.

DR. NETON: Okay. Well, we'll look at it and get through it, but I guess I would say that this is the mechanics of it, not necessarily invalid. The numbers may change but the
methodology would remain the same.

  DR. LIPSZTEIN: Yes, I'll say.

  DR. NETON: At least as far as an intake assessment goes. And --

  DR. LIPSZTEIN: Yes.

  DR. NETON: -- we'll take a look at it, because I'm pretty sure we can't address this on the fly.

  DR. LIPSZTEIN: Okay, okay. Just look at the previous documents and you will see that it was NIOSH proposal.

  DR. NETON: We provided this in one of our White Papers, is that what you're --

  DR. LIPSZTEIN: Yes, exactly. And we agreed it was correct.

  CHAIR BEACH: Joyce, do you have the date of that document, by any chance? Open or handy?

  DR. LIPSZTEIN: Now, no. But I can understand you.

  CHAIR BEACH: Okay. So --

  DR. LIPSZTEIN: I have to look.
DR. NETON: Yes.

CHAIR BEACH: Okay, that's fine. Yes, if you can tell us later on in the call, that would be helpful. And so that one is just for the mag-thorium dose reconstruction, correct? Okay.

So let's back up and NIOSH, this is your paper. If you want to go ahead and talk to it. And then, of course, we'll have SC&A talk about their memo. Does that work for everyone?

MEMBER LOCKEY: Yes, that's fine.

CHAIR BEACH: Okay.

MR. DARNELL: All right, Pat -- Mutty, would you mind going over the paper, please?

MR. SHARFI: Sure. Well, in the example, they are -- do you want me to just focus on the mag-thorium or the entire example DR?

CHAIR BEACH: Well, let's --

MR. SHARFI: Because there's the tritium and the nickel.

CHAIR BEACH: Maybe we should just hit them one at a time. Let's do the mag-thorium and then decide where we are with that, and then move
on to the others. If that seems reasonable.

MR. SHARFI: Sure. Whatever works for you. All right, because the mag-thorium that we discussed before was based on an exposure between August of '61 to March of '63, and then there was stop in operations assumed. And the operations was continued back up in August of 1970 and continued through the end of '77. That's how the example DR was done.

There was an assumption that, based on the site, limit engineering controls at Kansas City Plant of 3E to minus eleven microcuries per milliliter. That that air sample control at the site was constantly contained at that level for 2,000 hours a year. And that was assumed for the operators' exposure.

And then the Battelle 6000 kind of trickled down. The laborers were given half that, supervisors half the general laborers. And the administrators were given a tenth of the supervisors. That's the standard ratio out of Battelle 6000 for other job categories.
The example DR was really more focused on the operator. So the intakes were -- both for inhalation and ingestion were based off that Kansas City Plant engineering control limit. So an inhalation intake of 438 dpm per calendar day and an ingestion rate of 9.1 dpm per calendar day was assigned for every day during the assumed operational period, as I mentioned before.

As an example, I give the annual intake rate based off of various years. And the calculated doses associated with thorium, the lung doses, almost 300 rem. The liver dose at 26 rem. Bone surface was dose 1200 rems. Kidney dose about 22 rem. Prostate about three and a half, and the skin was about three and a half rem associated with those.

And that's, I mean, it's a pretty straightforward dose assessment. And then we assumed natural thorium. And this is assumed a gross alpha intake rate, so that we used natural thorium as Joyce has pointed about whether or you should use natural or triple separated. I guess
that's an issue to discuss later. But this assessment was done based off natural. And I don't know if there's much more. And it's a pretty straightforward dose assessment. Questions? Comments?

CHAIR BEACH: Thanks.

DR. MAURO: This is John again. I'm sure you've rehashed this. This has been gone over before that 3 times ten minus eleven, I believe it was, microcuries per cc.

CHAIR BEACH: Right.

DR. MAURO: I'm sorry, say again?

CHAIR BEACH: That's correct.

MR. SHARFI: Yes, that's correct.

DR. MAURO: Now, and again, this goes back a ways, and in reading over the history of that number, and there was some discussion regarding, as you pointed, whether that is the gross alpha, which includes all of the alpha emitters associated with thorium and its progeny. Joyce had mentioned this ratio of .19 for the Thorium-228. And of course there are these other alpha emitters in the
decay chain. Just to refresh my memory, when you
say 3 times ten to the minus eleven, are you talking
about gross alpha or is that thorium-232 all by
itself and you're assuming all the progeny are
present at the same level?

MR. SHARFI: The gross alpha sample,
and then it's split into the various alpha
emitters.

DR. MAURO: And all the alpha emitters
are in equilibrium, so the amount of thorium is much
less, thorium-232? In other words, the amount of
thorium-232 is not 3 times ten to the minus eleven?

MR. SHARFI: Correct.

DR. MAURO: Okay. I just wanted to make
sure I understood that.

DR. LIPSZTEIN: Okay, one second. I
just found -- there was a response paper called
Internal Exposure to Thorium --

MR. SHARFI: Can't hear you.

DR. LIPSZTEIN: There was a response
paper from NIOSH from January 9, 2015, that talks
about, on Page 14, it talks about the activity ratio
of .19. It's saying the three separated thorium
to target subjects chosen intervals between
chemicals and results thorium-228 to thorium-232,
activity ratio of .19.

And it explains why this ratio should
be used. Thorium coming from Canada, something
like that. But it's from this paper from NIOSH on
Page 14 from January 9th, 2015.

MR. MCCLOSKEY: What's the title of
that?

DR. LIPSZTEIN: The Response Paper
Internal Exposures to Thorium and Progeny at KCP
During Mag-thorium Machining, January 9, 2015,
Page 14.

CHAIR BEACH: Yes, I was just digging
mine out. I have a copy of that here, too. Bear
with us. So, Pete and Jim, are you guys looking
at that, and do you want to comment --

MR. DARNELL: I haven't found it, actually.

DR. NETON: Okay, I found it. It does
say in our response that we would use triple
thorium, triple testing.

CHAIR BEACH: Okay, yes. Thanks, Joyce. Good catch there. So any other comments on this or Work Group Members, questions, comments? So pass forward on this would be what, Pete?

MR. DARNELL: I guess we need to redo the example DR using the triple separated.

CHAIR BEACH: Okay. And that's something you can do and just send out to the Work Group?

MR. DARNELL: Yes. That won't be sent until June from the methodology used. I guess what we need --

CHAIR BEACH: Right.

MR. DARNELL: Before we go ahead and do that, I mean, is the Work Group in agreement that for mag-thorium, the methodology used is okay or that specific number needs to change?

MR. FITZGERALD: Josie, I think Ron Buchanan's on the phone and he went through, step by step the DR process itself, which is what Pete's talking about. Maybe he can --
CHAIR BEACH: Right.

MR. FITZGERALD: -- say a few words.

CHAIR BEACH: Yes. I think, yes, we should definitely hear from Ron.

DR. BUCHANAN: Okay. This is Ron Buchanan, SC&A. I did not go back through all the previous discussion on this White Paper. What I did is I went through and looked at the methodology that NIOSH used and how they applied it to the DR. That was my point of interest when I evaluated this. But I went through, number one, to see if it was done correctly. And, number two, if there was any red flags.

And so I looked at their example and they did include five different organs and the full time span that we had previously discussed on the exposure to mag-thorium. And I did not see any major areas that there was a problem in, any red flags, or misapplication of the method to the DR, per se. You know, the mechanics of it.

And the doses did come out fairly high. I think probably a little higher than what most
people expected. They came out about three rem to the skin and about 1200 rem to the bone surface. It's something that does need to be seriously considered.

In my evaluation in the report I sent out recently, I did not see any real problems with the method that they used to reconstruct the dose in these examples. Now I took it that they were using the right thorium, as Joyce pointed out.

They had previously agreed in their White Papers to a different ratio, which would simply change that number but the rest of the mechanics would remain. So I see no problems with the mechanics of applying their dose reconstruction method to mag-thorium doses for Kansas City workers.

DR. LIPSZTEIN: And also, Ron, should be a difference when you calculated dose for internal organs like bone surface or liver. And then should the Type M should be used and Type S should be used for lung.

DR. BUCHANAN: Yes. In the dose
reconstruction, you use the type that would produce
the largest dose to the organ of interest.

DR. LIPSZTEIN: Yes.

CHAIR BEACH: And was that done?

DR. BUCHANAN: I would have to back and
look at that and see which type of solubility. I
can't answer that question right off, but I can --

CHAIR BEACH: Mutty, can you answer
that?

MR. SHARFI: Yes. I mean, that is our
standard protocol is to get the solubility type
that would give the largest exposure.

CHAIR BEACH: And so that was done in
this case then?

MR. SHARFI: Yes. If I didn't note
that, then it should have been noted. I might have
--

CHAIR BEACH: Okay.

MR. SHARFI: -- in the CAD files, but,
I mean, I believe I ran all solubilities for all
cancers. And then I used the one that resulted in
the largest dose.
DR. MAURO: This is John Mauro again. It sounds, what I'm listening to is that there are two ways of thinking about this. One is that your 3 times ten to the minus eleven is your gross alpha representing all the progeny present in equilibrium and in the air.

And the other scenario would be -- no, it's going to be primarily thorium-232 with thorium-228 at a concentration that's .19 in the air. And then that gives you your 3 times ten to the minus eleven. And then, of course, there are the other alpha emitters.

It seems to me that, now I did do the calculations, that changing that mix of what constitutes 3 times ten to the minus eleven should have substantial effect on the doses, not a minor effect. Or am I incorrect about that?

DR. BUCHANAN: Yes, it can have an effect on the doses. It just wouldn't have an effect on the methodology.

DR. MAURO: Oh, okay. I just wanted to make sure, because it sounded like that different
didn't make that much difference and I agree that it's the mechanics. But I think that the outcome, in terms of what the dose to lung, the bone and soft tissue would be, would be substantially different depending on how you treated the mix.

DR. BUCHANAN: Yes, that's correct.

CHAIR BEACH: Okay.

DR. LIPSZTEIN: And also the amount of thorium was two percent. After '70, was three percent, and --

DR. BUCHANAN: Yes.

DR. LIPSZTEIN: -- '61, I think.

DR. BUCHANAN: Yes, Josie, I did go back and look at the CAD worksheets and the solubility they used. The assigned dose was the largest dose organ of the solubility, so I know I verified that but couldn't put my finger on it.

CHAIR BEACH: Okay. Thank you. Good. Okay. So any other questions or comments for the mag-thorium dose reconstruction?

MEMBER CLAWSON: This is Brad. I kind of got a little bit lost there. But bottom line
is the way NIOSH did it, the way I'm taking it, is they performed this correctly and that they used the right organs of interest. Is this correct?

CHAIR BEACH: Yes. That's my understand as well.

MEMBER CLAWSON: Okay.

CHAIR BEACH: That they, yes. John or Loretta or Jim, anything on this?

MEMBER LOCKEY: No. Brad, you helped me. You clarified it for me, Brad. That was my opinion, too.

CHAIR BEACH: Okay. So what can we expect or when, Pete, on the -- or maybe I should just ask maybe on the recalculation of this one?

MR. DARNELL: Can we get back to you on that? This is Pete. We'll get back to you on that.

CHAIR BEACH: But we do know it needs to be proven, correct?

MR. DARNELL: Yes. From what I'm understanding, the Work Group agrees that the methodology for the mag-thorium was appropriate.
The number used was off and needs to be recalculated.

CHAIR BEACH: That's my understanding, too, unless I hear from --

MR. DARNELL: Okay.

CHAIR BEACH: -- somebody else on the Work Group. We heard from Jim and Brad. Loretta?

MEMBER VALERIO: I agree. I agree.

CHAIR BEACH: Okay. And John, are you still with us?

MEMBER POSTON: I am, and I'm fine.

CHAIR BEACH: Okay. Perfect. So, yes, I think that would be correct.

MR. DARNELL: All right. I'll get back with you later today or at the latest tomorrow on when the Work Group will receive the recalculated numbers.

CHAIR BEACH: Okay. And I'll have some questions on who this is going to apply to, but because it's going to, questions on this one and tritium, I'm going to hold that off until we get through the tritium discussion.
MR. DARNELL: Okay.

CHAIR BEACH: Unless you want to take those individually? Or I guess we should take them individually, because they are individual. So refresh us on who these will apply to, because I know that question is going to come up at the Board level too.

MR. DARNELL: Okay. As far as I understand it, each one of the workers' categories from that have either the training, exposure monitoring, or medical qualifications for doing the work will have the dose reconstructions applied to them.

CHAIR BEACH: Okay. So people that you can identify who were actually doing the machining. How about people in the adjoining areas and workers that worked around this?

MR. SHARFI: Are we still talking about just thorium?

CHAIR BEACH: Yes.

MR. SHARFI: All right. Okay, here are intake rates for supervisors and admin that
would get applied.

CHAIR BEACH: Yes, I did catch that.

Those would be different than the janitors and the --

MR. SHARFI: Right.

CHAIR BEACH: -- people that were working right in the same room --

MR. SHARFI: Correct.

CHAIR BEACH: -- which was not supervisors and admin.

MR. SHARFI: So the operators and the laborers directly involved with the operations would be based on identification associated with that work. And everybody else would fall into the supervisor/admin. If you want to call it like an environmental exposure.

CHAIR BEACH: Yes. Well --

DR. NETON: This is Jim. It's a pretty broad application. I think, like Mike's saying, anybody who had a chance to be working in the area would be provided that dose, other than --

CHAIR BEACH: Okay.
DR. NETON: -- a supervisor or administrative staff.

CHAIR BEACH: And laborers and --

DR. NETON: That would be everybody --

CHAIR BEACH: -- janitors.

DR. NETON: -- that was in those areas.

CHAIR BEACH: Okay.

MR. DARNELL: It's -- it uses the TBD-6000 model, isn't that right? Correct?

DR. NETON: Yes, yes.

MR. MCCLOSKEY: Okay.

DR. MAURO: This is John Mauro again.

Real quick, we've run across this TBD-6000 split and we're fine with the concept and when we review TBD-6000.

Where we sometimes, and only rarely, do we run into a situation on the actual application to a real case. When they decide that, well, we're going to make this person a laborer or a supervisor or an operator, and there's certainly some judgment involved there.

But my experience has been that, and at
least the DRs that I reviewed, that NIOSH is usually
given the benefit of the doubt and given the high
end fraction to the person. Assuming that he's the
operator, unless there's overwhelming, you know,
information that really the person was not an
operator, so.

But I think that you can't really deal
with this as a SEC or as Site Profile type issues.
It's almost on a case by case basis. And the
fundamental concept, as laid out in TBD-6000, has
been found acceptable. It's its actually
implementation during the DR that becomes the
issue.

CHAIR BEACH: Right. I agree with
that. I guess my biggest concern on this is the
laborers and the janitors were working on the
machines, cleaning the machines, getting rid of the
waste. And so there's some -- they don't fit in
the supervisor category and I guess that's my
concern.

DR. MAURO: That's a great question,
because that sounds like a special circumstance.
CHAIR BEACH: Oh --

DR. MAURO: Yes.

CHAIR BEACH: Well, we had some interviews that identified that.

DR. MAURO: Yes.

MR. SHARFI: I think the intent was they would be assigned a dose of 3 to the minus ten.

CHAIR BEACH: Okay. I just wanted to make sure I'm hearing that.

MR. SHARFI: Well, the laborers, so this support personnel, the laborers, the janitors, whatever, that are rad worker generated, you know, laborers --

CHAIR BEACH: Okay.

MR. SHARFI: They would get the general laborer exposure.

CHAIR BEACH: So is what again?

MR. SHARFI: So this is going to be the hands-on. So that would be half the operator's exposure, so.

CHAIR BEACH: Joe, do you have any comments on that for total, really?
MR. FITZGERALD: This was one of the other issues. If you remember, there was one issue was the waste handlers. The other issue was D&D. And this was the very -- this was, in fact, the question.

Because these individuals apparently, by interviews we found, handled materials. Directly handled the materials routinely. And I thought the resolution, correct if I'm wrong, Pete, was that we would include them if we, you know, as identified, we would include them and assign the thorium value as if they were operators. And I thought that's the way it was left to those --

MR. SHARFI: I believe we wrote it up as we would be giving them the air sample at 1.5 instead of 3.0, which is, in the general laborer category, of half the operators.

MR. DARNELL: Right, right. Important general -- I remember that conversation. Actually, I'm sorry, I don't remember that conversation per se, but I do know that we agreed on using the TBD-6000 approach. And that's all
that we're trying to say is that these workers are assigned per the categories listed out in TBD-6000. I don't know why we would want to change that approach for this particular site.

MR. MCCLOSKEY: Hey, Pete, can I chime in here? It's Pat.

MR. DARNELL: Sure.

MR. MCCLOSKEY: So we documented that -- SC&A brought that question to us for the D&D. The lower case D&D workers and for the waste handlers. And where there was that group that was

CHAIR BEACH: Right.

MR. MCCLOSKEY: -- identified as being illiterate or something like that. And so in our memo to you guys dated June eleven, 2015, our memo to the Work Group, we go in and we address, we looked at the waste handlers and the lower case D&D workers that took apart machinery.

And we had a long discussion there. I have it in front of me now, if you want to hear parts of it, about, you know, what interviewee said and
what the records indicate. And like Mutty just said a minute ago, we determined they fit into the laborer Class, which is half of the 3 minus eleven or 1.5. E minus eleven.

And we talk about, you know, we're giving this to them for a 2000-hour time-weighted average. And this is that paper where we also go into the discussion about work that occurred, surrogate data from Dow Madison where they had some really aggressive machining and they didn't air approach air samples near 1.5 minus eleven, so that's where we landed on this.

MR. FITZGERALD: Now, the issue matrix for both D&D and waste handlers, that both issues, this indicates that the agreement by the Work Group was that the coworker model, for example, for D&D workers. I'm trying to find the one for waste handlers. But NIOSH will apply the DU coworker model to all unmonitored rad waste and D&D workers. I thought that was similar to what was done with the thorium. I'm looking for that.

MR. MCCLOSKEY: Yes. For their
uranium or DU component of their dose, we were going to give them the coworker --

MR. FITZGERALD: Yes.

MR. MCCLOSKEY: -- for the thorium component of their dose. It was going to be --

CHAIR BEACH: And just to be clear on that, we haven't seen the coworker models for those yet. Is that correct? That's coming later?

MR. FITZGERALD: That's correct.

CHAIR BEACH: Okay.

MR. MCCLOSKEY: The coworker models exist in the TBD. What we're doing now is evaluating the database that the coworker models were built from. And you're right, we're going to talk about that soon.

MR. FITZGERALD: So just to not leave this open, the agreement by the Work Group in July was to apply the uranium coworker model to extend that to unmonitored waste handlers, as well as D&D workers. That's the way it was resolved and we agreed with that.

CHAIR BEACH: And that was at the half
dose or full dose?

MR. FITZGERALD: Just applying the uranium coworker model. There wasn't any fractional dose assignment.

CHAIR BEACH: Okay.

MR. FITZGERALD: And that's right from Pete. That's right from your issues matrix that we distributed on July 30th.

MR. DARNELL: Yes.

CHAIR BEACH: Now that's the Site Profile one, is that correct?

MR. FITZGERALD: No, no. This is the SEC matrix --

(Simultaneous speaking.)

CHAIR BEACH: Oh, okay. Got you. Okay, so are we okay with that then? Anybody out there?

MEMBER CLAWSON: This is Brad. Why are we handling this one different than we are the uranium? Why are we handling -- I know that we're doing it for TBD-6000, but why is the thorium different?
DR. NETON: Brad, this is Jim. The thorium was actually an upper bound value based on the maximum permissible concentration in air. There is no coworker model per se. It's just a bounding upper limit. For the operators.

MEMBER CLAWSON: Okay.

MR. FITZGERALD: And I think just to go back to the original discussion, when you have these laborers who were, and custodians that were, cleaning the machines and hauling away the chips. They were also supporting the uranium operations and it was difficult to distinguish. They weren't supporting the thorium. You know, there's only a couple machines that are so devoted to thorium. So they were doing all the machines.

So the conclusion, I think, of that discussion back in the summer was it would make more sense to assign them the uranium coworker dose and leave it at that. And I thought, I think the Work Group was comfortable with his, you know, go ahead and having the laborers, anyone that could be identified as doing that kind of work, handled that
MEMBER CLAWSON: All right.

CHAIR BEACH: Okay. Any other discussion on that? Hearing none, shall we move on to the tritium?

MEMBER CLAWSON: You know what? I do have one more thing to say. I'm kind of with John on this. The thing that does bother me about this how we're going to implement the TBD-6000. I have no problems with TBD-6000, but it's going to be done on a case by case scenario.

The one part that worries me is when somebody's been like a laborer or an operator or something like that, and then go into management and become a supervisor. Sometimes we don't get -- there's a crossover that -- it's the implementation of TBD-6000 that's got me nervous.

CHAIR BEACH: Yes. And I believe we've agreed to using TBD-6000, so it becomes this Site Profile issue that will be up for discussion when we close out all the SEC issues. Is that correct?
MEMBER CLAWSON: Yes.

CHAIR BEACH: Well ---

MR. DARNELL: Brad, to answer some of your concern, generally, when we do a dose reconstruction, if the worker was categorized, say, as a laborer and then went to QA, you know, then went into management, then went back to something else, if he falls into different dose worker categories, he gets dosed assigned for those periods he was that worker category.

So, if for ten years he was a laborer and ten years he was a manager, ten years he gets laborer dose, ten years he gets manager dose.

MEMBER CLAWSON: And I realize that, Pete. But you know what? I've looked at the records, same as you have. And it's really hard to follow that. And you know, if you don't have a CATI report where exactly he was at, you're kind of guessing a little bit. And that's my only thing.

And so, you're right, Josie. We'll take care of this on the Site Profile issue and look
into it and make sure. And I'll see it on the dose reconstruction side.

CHAIR BEACH: Thanks, Brad. Anything else on that thorium before we go on to the tritium does reconstruction sample?

All right, hearing none, Mutty are you going to go ahead and do this one also?

MR SHARFI: I can.

CHAIR BEACH: I mean, I'm not saying you have to. I'm just assumed you were.

MR. SHARFI: No, I'm all right. Don't worry about it.

CHAIR BEACH: Okay.

MR. SHARFI: I will add that on the medical records that we did get from them. Those medical cards do have a detailed history of their work history as they've changed over time.

So those are actually a very good thing that the site did keep on their medical history cards about department, when they started and stopped, and what their title was throughout their history of the work at the site.
CHAIR BEACH: Okay. Thank you for that.

MR. SHARFI: So, the tritium is broken up into two parts. There is the high-low switch plates they did and the manufacturing of the tritium monitors.

I'll start with the high-low switch plates. These, this occurred between 1963 and 1968. The site was using a tritiated phosphor to create the production of these luminous dials.

The form of the tritium that they were using was an organic compound called tung oil, also known as China Wood oil. It's an organic that they've used to incorporate this phosphorus, tritide to, attached to these switch plates.

Basically, we did a analysis assuming that the switch plates had a, based on some, I believe, some swipes that they did over these surveys, about the leaching of the tritium off these plates.

As I said, the contamination on the surface of the entire plate would have been
absorbed through the skin and taken in as intake. Based on the procurement records, we assumed there's at least 500 of these plates were ordered by KCP.

So, we calculate basically a total intake of organically bound tritium absorbed through the skin based on a surface contamination and a production rate. And, so this gave us an exposure of about 1.8 millirem per year throughout the entire period, just the assigned all workers.

I don't know if you need more detail into the derivation of the intake, of the --

CHAIR BEACH: Okay, thanks, Mutty. And, Ron, did you want to go ahead and talk about new, you looked at the way this was done also.

DR. BUCHANAN: Yes. This is Ron Buchanan, SC&A. I looked at this and considered did they use the method they said they was going to. And, did the method make sense.

And, this is again, you know, subjective, what, how many plates came to, how many they could do in a day and such. I feel that
overall it was claimant favorable. They used the 95th, they did actually have some slight measurements, so did have that to base it on.

And, they used the 95th percentile, considered both sides contaminated. And, arrived at a dose of about one or two rem a year, and from tritium.

And so, I did not find any red flags or problems with this issue. It's a small dose, but it's probably claimant favorable. And, I didn't have any issues with it.

CHAIR BEACH: Okay. Thank you, Ron. Any Work Group comments or questions for either Ron or at NIOSH?

MEMBER LOCKEY: Jim Lockey. I don't have any questions.

CHAIR BEACH: Thanks, Jim.

MEMBER POSTON: None for me.

CHAIR BEACH: Okay. Thanks John.

MEMBER VALERIO: This is Loretta. None for me. Not on the tritium.

CHAIR BEACH: Okay. Thank you.
Brad, anything?

Okay. Brad will be back. So, I do have one question.

MALE: Sure.

CHAIR BEACH: I know in your paper, Mutty, it says chemistry technicians. And, I guess my question is, who were the chemistry technicians? Are you going to be able to identify them?

MR. SHARFI: This is thinking everybody. It's such a small dose.

CHAIR BEACH: It's going to everybody.

Okay. Well, there, that clears that up.

MR. SHARFI: Yes. But, in both these tritium cases, there's such a small dose, it's easier just to roll it in as an environmental exposure and give it to everybody, than it is to first off, trying to figure out who --

CHAIR BEACH: Okay. Good. That's satisfies my questions then. Anybody else?

MEMBER CLAWSON: Hey, Josie. This is Brad. I'm back. I just had to step out and take
care of something real quick.

CHAIR BEACH: Okay. Yes. Well, someone told us, your assistant. So, these, this tritium doses will go to everybody. Any questions on it?

MEMBER CLAWSON: No.

CHAIR BEACH: Okay. So, Mutty, if you want to take the second part of this?

MR. SHARFI: Sure. The manufacturing of tritium monitors. I can't think, primarily used to manufacture these instruments back in, starting in '59 and, ran, the campaign ran through about the mid-1970s. So, we said 1975.

Basically, the main exposure would have been from, they were creating these small bottles of standardized solutions in order to basically test these kits. So, you got a 400 ml solution that was 250 microcuries per liter that came with each one of these instruments.

So, basically we looked at a volume scenario assuming that the 400 bottle was spilled over the course -- The total volume of 400 ml was
spilled over a course of a year and was absorbed in by a worker.

This is, we assumed would be claimant favorable because obviously, this material from, was under procurement they, you know, they're literally treating, or this was a production material. So, it's not like you would attempt to lose an entire source term while working.

This was also a, also done in a hood. So, there was a ventilation system. There's a likelihood that the entire spill would have been absorbed through the skin is unlikely, all 400 mls.

So, if you assume all 400 mls based on a concentrations of the tritium in the solutions, you get an intake rate of about 2 E to the 8th dpm of treated water.

Assumed on an annual basis, they were actually, each worker was getting 400 mls of exposure every year from 1959 to 1975. Results in a dose of about six millirem per year. And, obviously, if they spilt that much, they would have had no inventory.
CHAIR BEACH: Right.

MR. SHARFI: So, this was a bounding scenario for any worker, like I said, we'd give this to any, given so small, it's just, it's easier just to apply to every single worker on the workforce through that time.

CHAIR BEACH: Okay. Thank you. Ron, anything on this for you?

DR. BUCHANAN: No. I went over the scenario and the assumptions, and if you worked with tritium, you know you wouldn't lose 400 mls a year and absorb it all.

So, this here, this is a binding situation that assigned a dose. It's a small dose and it's probably over a factor of a hundred or so. So, I don't see any issues with it.

CHAIR BEACH: Okay. Thank you Ron. Any Work Group discussion or questions? Comments? Okay. Hearing none, shall we go ahead and move on to the nickel-63?

MR. SHARFI: Sure. Nickel-63 was used at a time for manufacturing tritium in air and urine
monitoring. Instrumentation designed by Sandia, used a plated, they did a plating of nickel-63 on the small aluminum metal coupon for the calibration standard.

So, an analysis was done involving the micro-error falling of the nickel that could have occurred. That the amount of material was uniformly distributed into a five by five meter room with a, you know, a three meter ceiling.

We assumed a volume, a 75 cubic meter volume of area that could have been exposed, and assumed in that a standard breathing rate, you get a, an air concentration of about 8 E to the minus eleven microcuries per ml airborne, while they would have been doing this activity.

And so, if you assume that during a 60-minute plating operation, a worker would have inhaled about .1 nanocuries or about four becquerels of exposure. And, given the assumption of this may have occurred maybe 100 times a year, you get a, an exposure that's much less than one millirem.
So, for the nickel we've determined that really no, no the dose was considered negligible and no dose would be assigned.

CHAIR BEACH: Okay. Yes. And I believe we agreed to that in our Work Group, one of our Work Group meetings. Is that correct?

MR. SHARFI: Yes. I think we've presented this before.

CHAIR BEACH: Yes. You sure have.

Any other questions or comments on this?

DR. BUCHANAN: I just had one. This is Ron Buchanan. Do you know what years this took place? I couldn't find any reference to years. Not that it really matters, but not -- it wasn't any reference to years this was done. Do you know when that was done?

MR. SHARFI: I do not off the top of my head.

DR. BUCHANAN: Okay. Was this a long thing? Or, do you know if it was just a once, you know, a short campaign or have any idea on that?

MR. SHARFI: Pat, do you remember, I
mean we --

MR. MCCLOSKEY: I think we're saying it mirrors the manufacturing of the tritium monitors --

MR. SHARFI: I believe, yes.

MR. MCCLOSKEY: -- from 59 to 75, Ron.

DR. BUCHANAN: Okay. Well, I, kind of, thought that, but I didn't see it down and printed.

MR. MCCLOSKEY: Part of that operation.

DR. BUCHANAN: I reviewed this and again, it's pretty subjective, but I don't find that it amounts to hardly any dose.

So, you know, however, you set up this scenario, I don't think you'd come out with anything that would be significant regards to how you set up the boiling off of the fumes and all that. So, I didn't have any issue with it.

CHAIR BEACH: Okay. Thank you Ron. Work Group Members, any comments or questions?

MEMBER CLAWSON: Brad. No comments.
CHAIR BEACH: Okay. Thanks. Okay.

So, where that leaves us is with one action item for the dose reconstruction for mag-thorium. The method is good. We all agreed to that.

But, we need to -- NIOSH needs to redo the numbers, that's a 0.19 activity ratio. And, you'll get back to us on that. Is that correct?

MR. MCCLOSKEY: Correct.

CHAIR BEACH: Okay. And then we need to go back --

DR. LIPSZTEIN: And also the percentage of thorium from '61 to '63.

CHAIR BEACH: Okay. Say that again, Joyce, please.

DR. LIPSZTEIN: The percentage of thorium in the mag-thorium was three percent from '61 to '63, and then two percent from '70 on.

CHAIR BEACH: All right.

DR. LIPSZTEIN: So, it has to be different.

MR. SHARFI: Well, that would be a mass based given the results are in gross alpha. The
percent mass is irrelevant to the exposure.

DR. LIPSZTEIN: Oh, okay. Yes. It's right.

CHAIR BEACH: Yes. I thought that was covered.

DR. LIPSZTEIN: Yes. Yes. Yes. That's right. That's right.

DR. MAURO: This is --

DR. LIPSZTEIN: That's right.

DR. MAURO: I have a question, I don't think we discussed. Again, it is probably is this Site Profile type issue is, for the time period from 1963 to 1970, where our course is on discussion on to, you know, the weight of the evidence, that there really was nothing going on at that time by way of thorium.

I'm assuming, then, that if you go that route, the exposures to thorium would be like residual exposures, as opposed to operational exposures.

And, have we discussed that at all, the approach that -- give that the thorium doses for
operations are so high, I presume even the thorium exposures for the residual period are not going to be insignificant. They're not going to be one millirem per year. And, I did not look at your example calculation.

I assume that in your example calculation, you included exposures to thorium during the residual period. Or, was the thorium operations not weapons related. I guess, I need just to understand the big picture during the residual period '63 to '70 if that's the route you go. But there was no --

CHAIR BEACH: That's a good question. I'm not sure we discussed it.

MR. SHARFI: There was no residual. I mean, the assumption was that because of the cleaning operations after each operation that there was no residual thorium after the operations.

DR. MAURO: Okay. Though, that's important, because I didn't hear that. So, in April of 1963, when according to your scenario, when thorium operations, mag-thorium operations
ceased, there was a cleanup that took place such that there was not very much residual.

The only thing I would say to that is, in the past when we encountered, I'll call it a residual period, whether it's the true residual period at the end of operations, or window, kind of, period where there was no operations.

You would go to the approach where you'd make some estimate of what might have been on surfaces. And, then you use the ten to the -6 resuspension factor and a rate of decline of .00067 per day. And, not just shut it down completely.

Other words, you would assign some, what I would call cleaned up area residual scenario as opposed to assigning nothing. And, I don't know whether that's been discussed by the Work Group yet.

MEMBER CLAWSON: This is Brad. That's a very good point, because there we get back to the situation that we have no clear-cut date that shows when we stopped, when we didn't. So, when, if there wasn't any operations going on, there's got
to be a residual.

CHAIR BEACH: Yes. Correct me if I'm wrong, I think we covered that in our D&D discussion.

MR. FITZGERALD: Well, we also interviewed at least one, if not two workers who were involved in the D&D that took place in D20 in the mid 60s. If you remember the one guy we talked to, I think it was he worked there until barely '65, and he was cleaning up those operations, so there was a cleanup.

And, also a continual cleanup with equipment being taken apart.

MR. SHARFI: Every time, yes. To make sure the equipment was perfectly between runs.

MR. FITZGERALD: So, you had, you know, you had interim cleanup and you had some periodic room cleanups. So, I guess that would have to be considered if you're talking about residual. I don't think there was a traditional residual period after the early 60s.

CHAIR BEACH: Yes. That's a good
point.

MR. DARNELL: One other thing that we need to remember, this site is a little different with their shutdown that's occurred and the survey that's currently ongoing at the old Bendix facility.

If thorium or uranium were spread around a lot and would have been in areas to cause this residual contamination, it would be detected now also. Just ---

CHAIR BEACH: Well.

MR. DARNELL: Part of the half-life of the material and we're seeing one or two spots where the acceptable contamination to be based on the operations, but no indication that there was a general spread.

So, we would get this resuspension of radioactive materials from the workers working in their general work area. It just didn't spread around to do that.

CHAIR BEACH: Yes, I think --

MR. DARNELL: That's precludes the
cleanup being effective in preventing a suspension period.

CHAIR BEACH: Pete, I think this goes more into the actual cleaning of the machines. I know that during our interviews, they talked about it taking days to clean those machines out so that they could break them down. So, and if that occurred during that time period that they're not covered, how would you cover them if it comes up that they were part of that work?

MR. SHARFI: The days, just the days after they stopped the work, or are you talking about like the seven years in between?

CHAIR BEACH: Well, I, Joe just said we had interviews that, in '65 they were talking about cleaning up the machines. And we did talk to a few people that took --

MR. SHARFI: I believe that the individuals Joe was referring to, they worked through '65, not that they were doing --

MR. FITZGERALD: No. They were, they were actually the individual, we have to pull his
interview, but he was doing room cleanups. He actually cleaned a crane that was used in that D20 operation. Now, he didn't do equipment cleanup. That was done by the laborers.

CHAIR BEACH: Laborers.

MR. FITZGERALD: I think we certainly found that out.

MR. SHARFI: Correct.

DR. MAURO: This is John again. The only reason I bring this up is that the standard procedure that has been applied across the board for the shutdown time periods, whether it's in between operations or at the end of operations, is to go at OTIB-70.

And, when there was cleanup, you still go at OTIB-70, but you use lower resuspension factors, that sort of thing. It sounds like that, in this particular instance, there's good reason and sounds like you're giving your reasons, why OTIB-70 does not apply.

That is, as opposed to many other sites that we work where it did apply. So, if that's the
case, in other words, if we, the outcome of these deliberations are, yes, we are going to treat '63 to '70 as a non-operational activity and assign zero to mag-thorium resuspension dose or residual dose, I think a case has to be made why that's the case since you're procedures do require, as a matter of standard operating procedure, to use OTIB-70.

CHAIR BEACH: Okay. And, I guess for me, this is Josie again, this is part, this will be part of a Site Profile discussion. Is that correct?

It's a good point, John, I'm not saying it's not, but for what we're doing today, I think that's something we need to keep in mind when we start discussing Site Profile issues. Is that, am I missing something or is that correct?

DR. NETON: This is Jim. Josie, I think you got it right. As John has pointed out, that there are methods to do residual contamination modeling for -- to '70.

It could be done, but I think the first
issue to decide whether or not this period belongs as a residual or does it belong a regular exposure period.

CHAIR BEACH: Yes. That just brings up more food for thought there.

DR. MAURO: I hate to bring this up, but is I have not heard an SEC issue arise during this conversation.

CHAIR BEACH: Then, no, this, the Board asked us to do sample dose reconstruction. So, this is why we're focusing on sample dose reconstruction. They're not SEC issues at this point other than we haven't closed out 13 yet --

DR. MAURO: Okay.

CHAIR BEACH: -- which was, is an SEC item.

DR. MAURO: Okay.

CHAIR BEACH: So, this would go back into Issue 13. If we haven't covered it, then we may want to let that linger open until we, we're assured that, that is covered. Is that correct?

DR. NETON: Which one is Issue 13,
Josie?

CHAIR BEACH: Thirteen is the mag-thorium, and it is the one that has the dates that aren't covered, the '63 to '70.

DR. NETON: See, I don't know that, that's an SEC issue as far as I'm concerned. I mean, it's either --

CHAIR BEACH: Well --

DR. NETON: --we either include it or we don't include it. I think either way. Well, if we include it, the method is there for bounding the dosage. It's just a decision needs to be made one way or the other.

CHAIR BEACH: Right. Yes. So, this was just something new that I don't know if we've addressed or thought about it if there was any cleanup being done during that time period. So --

DR. NETON: Well, again, if we decide that operations didn't continue in that period, and, you know, it could be discussed as a Site Profile issue as to how much dose if any were added --
CHAIR BEACH: Right.

DR. NETON: -- during the residual period.

CHAIR BEACH: Right.

DR. NETON: The worst case scenario would be, you take three times ten to the minus eleven and drop it down for 30 days per --

CHAIR BEACH: Yes.

DR. NETON: -- the requirements and calculate the surface concentration and estimate a resuspension factor.

CHAIR BEACH: Okay.

DR. NETON: And, find that dose. That's pretty straightforward.

CHAIR BEACH: Yes. It is. It sounds reasonable to me. So, any other comments or questions and we can wrap up these two discussions? So, on the dose methodology we already said NIOSH has got an action there. As far as, let's go back to the mag-thorium issue. Is the Work Group comfortable closing 13?

Keeping in mind that if any additional
information for that time period that we've been discussing comes up, that of course we'll address that. Is there any other discussion on that, or shall we close it? Brad?

MEMBER CLAWSON: I just, I think it's something we need to address, but I think NIOSH is already shown that, you know, they've got the ability to be able to bound it and so forth like that.

We just, I don't want to see this dropped. But, I think, I don't think it's a SEC issue. I think it's more of a Site Profile.

CHAIR BEACH: Okay. Then we'll take it up there. Loretta? Close or?

MEMBER VALERIO: Yes. I would say close it.

CHAIR BEACH: John? Jim?

MEMBER LOCKEY: I'm okay.

CHAIR BEACH: Okay. Thanks Jim. John are you still with us? We might have lost John. I agree that it should be closed. So, at this time, Item 13 is closed.
We have one action for the sample dose reconstruction. Before we leave that though, Pete, we do, we are going to report out to the Board. And, this was one of the Board's requests during our Work Group time was that NIOSH do these DRs.

Are you going to do a presentation on what you guys have done here for dose reconstructions when they're complete of course?

MR. DARNELL: What I was planning on doing based on the outcome of this meeting was a full presentation for the Board with our recommendation whether or not there was an SEC for Kansas City. And, I could definitely include an overview of the example DRs.

CHAIR BEACH: Okay. Yes. I think that you probably should. That would be a good idea. Okay. So, we are moving on. Does anybody need a comfort break? We've been at it a little over an hour.

MR. DARNELL: I just want to ask one thing to make sure I have it captured.
CHAIR BEACH: Okay.

MR. DARNELL: What's coming out of this Site Profile issue will be residual mag-thorium monitoring. Issue 13's closed. We're redoing the example DR for 0.19 activity ratio. Is there another thing that was being moved to Site Profile?

CHAIR BEACH: No. I think this was all we had talked about.

MR. DARNELL: Okay. Then, I'm happy with a break if you guys want to take one, or.

CHAIR BEACH: Okay. Well, we've got --

MR. DARNELL: Or not.

CHAIR BEACH: We've got another probably 15 to 30 minutes to go I would say. So, Ted, shall we take a five or ten minute break.

MR. KATZ: If, does anyone want a comfort break?

CHAIR BEACH: Pete just said he would like one.

MR. KATZ: Oh. Okay. Then, let's, by all means.
MR. DARNELL: No. I said, I'm okay with not having one.

MR. KATZ: Oh. Okay. Then if no one is asking for one, then let's just, let's plow through.

CHAIR BEACH: Let's move through. So, the next issue is the preliminary issue on information on Issues 1 and 9. And, Pete, that's yours to tell us what's happening there, or Pat.

MR. DARNELL: Yes. Actually, I'm going to turn it over to Pat after, and let you know that we fully plan on having the final on this done at least a week if not longer before the Board meeting. But, now we're shooting for a week before the Board meeting.

CHAIR BEACH: Okay. Are we going need to have some discussion on it before?

MR. DARNELL: Well, I'm, based on my initial views of this and talking to Jim Neton about it. It's nothing really good. I'll let Pat cover that. I don't think that we'll need a lot of discussion if any at all.
CHAIR BEACH: Okay.

MR. DARNELL: But, after -- if it's none, we can decide then. How's that?

CHAIR BEACH: Okay. That sounds great. Thanks.

MR. DARNELL: Okay.

MR. MCCLOSKEY: Okay. This is Pat McCloskey. At the July Work Group meeting, NIOSH described the plan for validating the database and showed a copy of the template that would be used to compile the data. That's when they held up that spreadsheet.

We described our plan to extract the raw data from the DOE supplied dose records in NOCTS and compare them to the database previously used for coworker model and the Site Profile.

The NOCTS files that we have for Kansas City Plant contain 223 claims with external dosimetry records, and 95 claims with internal dosimetry records. We also said that our plan was to compare 100 percent of those NOCTS dosimetry records contained within the 318 claims to the
17,810 database records.

Then, at that July meeting, the Work Group stated that they agreed that, that would be an appropriate means by which the electronic database could be validated through comparison sampling.

So, here's how the data entry performance went. Entry of the external data from the claimant data located in NOCTS was completed by five data entry staff. Their work began on August 24th, 2015 and was completed by September 30th.

The data was identified as being within the same time period used from coworker model -- that's January 1, 1950, through December 31, 2010. That data was entered into a spreadsheet and single tasked with periodic stops in data entry in order to peer review the data that had been entered up to that point.

The data entered by one person was peer reviewed by another data entry staff member so that the same person was not reviewing his or her own
work. And, that amounted to 100 percent review of all that data entered into that spreadsheet.

After completion of the data entry or external dosimetry data, another step was taken to insert uranium in urine, or U in U results from the identified claimants.

Two data entry staff were tasked with inserting the in-vitro analysis data into the spreadsheet. And, during this effort another peer review was conducted to identify and correct discrepancies or errors.

There were several different formats for the staff to decipher while entering the data. And, in the end, they compiled 5,878 lines of data onto a spreadsheet, with each line containing between one and seven individual records.

So, here's our results. On October 1, 2015, two officers, myself and another began compiling and comparing the NOCTS data to the database data used in the Site Profile's coworker model. It's the information printed the spreadsheet and it would be deep dose, neutron
dose, shallow dose and U in U data.

And, we completed our preliminary work on that on October 19th. That's why you're not seeing this in a written form right now. It's been that recent. There were 1,653 annual totals that were compared between the sum of NOCTS raw records and the database annual totals. Of those, 1,598 or 97 percent were determined to agree.

Of the 55 entries with some level of disagreement, approximately 15 were because the NOCTS records could not be easily read and requesting a cleaner copy from Kansas City Plant would most likely resolve the discrepancy.

Also, approximately 15 discrepancies are associated with the database or NOCTS soliciting an actual zero value, and the other having no record value. In other words, it was blank. The remaining 26 discrepancies are still under review to determine the source of the discrepancy.

The data that were not considered in the Site Profile's coworker, that's eye dose and
extremity dose, were added to the previous data I just mentioned about, just mentioned. That would be added to the deep, the neutron, the shallow and U in U data. And, we performed an analysis of that looking for the level of agreement.

And, of the 1,805 annual totals that were compared 1,714, or 95 percent were determined to agree. And, we haven't analyzed those discrepancies yet.

Then we analyzed internal data separately. We found there to be a 179 annual totals, and 157 or 88 percent were determined to agree. Of those, now there appears to between two disagreements. I think they would be better classified as yet to be verified.

And, so as you heard me say before, from the external dose comparison approximately 15 were because of the NOCTS records could not be easily read.

The lion's share of those discrepancies were for internal monitoring. So, they contributed to the error rate up, when they were
all added together. But, when you pulled it out by itself, they had a larger effect.

And, what we're seeing is that prior to 1963, and maybe even earlier -- we're going to get that date pinned down. The practice was that you had these four inch by six inch index cards where they wrote their doses on those index cards went inside an envelope.

And, the internal records were always handwritten on there. And, that was the practice for the first few years. And, those are where we had the problems with legibility.

This is something that, you know, that Ron Buchanan brought up a while ago on a different issue. Something that we looked at when we visited the site.

And, so, you know, the legibility's never a question with the database. Right. That's electronic file, that you can always read that. And, you'll see a zero there for a certain person for a certain time period.
And, then you go to the NOCTS record and you can imagine there's something there, but you can't in good faith call it a number. So, at the moment, we're calling it a disagreement. We think if we are able to get more copies from the site that those disagreements will become agreements.

Initially, maybe in 2006 or so, the site, when we wouldn't have a claim, would Xerox something black and white, send it to us, we would scan it in to NOCTS. And, there are examples in NOCTS now that you can see that are just hard to read.

But, since then, more recently, we've received information from the site in the form of digital. We've gotten flash drives from them. And so now, they're in color. They're no longer black and white. You can see the yellow card clearly.

So, we're pretty confident that although there are some disagreements at the moment for internal, that those will become agreements.

So, another note, when we were doing
this comparison of internal records, it was identified that the U in U values recorded in the database are the sum of the individual urinalysis results collected throughout a given year.

So, if a person had, he contributed three or four urine samples throughout the year, the only value you'll see in the database is the annual total.

This approach may lead to a high bias or more claimant, claimant favorable in the file numbers that were presented in the Site Profile coworker model. So, that's what we have. We're in our early stages of our review on this. So, we'll try to get that in writing, like Pete said, in the next couple weeks.

CHAIR BEACH: Okay. Thanks. So, and when you distribute that will you have source, sources available for review? Source numbers and --

MR. MCCLOSKEY: You mean like NOCTS files you can go to and look at --

CHAIR BEACH: Yes.
MR. MCCLOSKEY: -- or --

CHAIR BEACH: Yes.

MR. MCCLOSKEY: -- like spreadsheet.

Yes. Sure.

CHAIR BEACH: Yes. Okay. Thanks Pat. Any questions for Pat? I'm assuming, Joe, Ron will be reviewing this?

MR. FITZGERALD: Yes. I suspect so.

When, I guess my question was when you're in the review process. When would the Work Group see a written product? I suspect some a couple weeks before the Work Group, or the Board meeting.

CHAIR BEACH: He said a week.

MR. FITZGERALD: A week before the Board meeting.

MR. MCCLOSKEY: So, the Board meeting's November 18th. Here we are at the 26th.

MR. FITZGERALD: So, about, somewhere about that time frame then?

MR. MCCLOSKEY: As fast as we can get it.

MR. FITZGERALD: All right.
DR. BUCHANAN: This is Ron. We'll need that, you know, sent to me as soon as possible because that doesn't leave much time to go through a lot of data. As soon as you get it out, I don't want it sitting on somebodies desk a week before I see it.

MR. KATZ: Yes. This is Ted. I wonder, I know this is all complicated logistics as to getting things clear, but if it's possible, if you work out a way that you can even in increments, as you get things done, sort of, ship them out for Ron at least, put eyes on even before you have the whole publishable thing ready.

If that's possible, that would be great. I'm not pressing you on that, I'm just, just a thought.

MR. DARNELL: Again, let me get back to you on that.

MR. KATZ: Yes. I'm not, like I said --

MR. DARNELL: I don't want an answer on if that's even possible. I'd like to talk with Pat
and Ron.

   MR. KATZ:  Great.

   MR. DARNELL:  See about that tomorrow.

I'll either get back with you later today or tomorrow.

   MR. KATZ:  Yes. Thank you. Thanks Pete.

   CHAIR BEACH:  Okay. So, just knowing that if that comes too late and we're not able to review it, that may hold up formal discuss, or recommendation to the Board potentially.

   MR. DARNELL:  I understand.

   CHAIR BEACH:  Okay. So, anything else, Work Group Members, on Issues 1 or 9? That actually concludes our work. We do have some official --

   MR. KATZ:  Josie. I'm sorry, it's Ted.

   CHAIR BEACH:  It's not -- Ted, I'll get back to you.

   MR. KATZ:  Okay.

   CHAIR BEACH:  I'm not going to forget
that you need to read those in.

MR. KATZ: That's not what I was going to address. I was going to address your point about recommendations.

Just, if you, if the Work Group's going to make a recommendation to the Board, it's either going to formulate it now or it's going to do, it would have to, sort of, do it in sort of consultative form during the Board meeting at the front end of the session.

But, there's no other way for the Work Group to come up with a recommendation unless you think --

CHAIR BEACH: Oh. That's true.

MR. KATZ: It's very hard to schedule a Work Group meeting for the last moment, but we could try that too, but.

CHAIR BEACH: Yes. That's a good point.

MR. KATZ: So, I mean, one suggestion I would have is you just make a contingent recommendation pending a positive outcome with
this data check, validation check.

CHAIR BEACH: Right.

MR. KATZ: And then, you know, obviously we've done this sort of thing before. I mean, you can present at the Board meeting and whatever, however that comes out, you can address that as part of it. But, I mean, that's probably the easiest thing to do.

MR. DARNELL: There is one thing I'd like to point out, you know, if it's sent with the database validation, all we're trying to do is see whether the database is valid for coworker model. Coworker model is actually a Site Profile issue.

CHAIR BEACH: Yes. I agree with that.

MR. DARNELL: I think --

DR. NETON: You know, Pat was not exuberant as I would be about this preliminary result. I mean, you know, of the first, in the External Dosimetry Database, there was 97 percent agreement of the annual, compared to the annual totals. That's pretty good.

I mean that, and the ones that weren't
in agreement were typically very small, you know, either zeros or non-detects, that sort of thing. There was some legibility issues on a few.

But I think what we're looking at here is the sampling we have that is sent up by the site of the original record here in this database, pretty faithfully. So, I'm very encouraged by this. I think that the database is pretty solid.

I don't see any indication of big chunks of data missing. Even in the internal where there was 88 percent agreement, it really is a kind of a legibility issue of what we currently have in house. So, I would say that I'm very favorably impressed with this initial analysis that they've done. Just my concern.

CHAIR BEACH: Okay. Thanks, Jim. And, I guess, I tend to agree that 1 and 9 are both Site Profile issues unless Joe, you have any other concerns there. Just --

MR. FITZGERALD: Well, the reason that they're even on the SEC issues matrix is the validation verifications. The standard step that
the Work Group looks for, I think --

CHAIR BEACH: Right.

MR. FITZGERALD: -- in terms of the validity of the data to begin with. And, as a matter of course, and for Kansas City, at least, that had not been done. So, you know from the standpoint of SOP as far as the Work Groups are concerned, we typically look for this at the very beginning.

And, it is a, I don't want to call it a prerequisite, but it's certainly, the validity of the data itself is something that's central to the SEC review.

CHAIR BEACH: Right.

MR. FITZGERALD: I mean, if the data's not valid, I would think that alone would be a question on the SEC side.

MR. DARNELL: Well, let me ask you this, Joe. What do you need to be able to make the call that the V&V is adequate? Do you need the entire report? Will a summary do?

And, the reason why I'm asking is my
goal is I'd like to have this presented and done in November. And, I know it, but pushing up against a real uphill climb here.

MR. FITZGERALD: Yes. I think, to answer your question, you know, we're two things really. The process itself, which is the process you're going through to be able to advise the Work Group that we felt the process is consistent with what's been done in the past. And, that certainly the review was sound.

The second thing, of course, is what Jim was referring to is the results of that process, and whether the results bespeak a degree of validity, which, you know, bolsters the legitimacy of the dose reconstruction process. So ---

MR. DARNELL: Correct.

MR. FITZGERALD: I think, to go back to what Ted was talking about, if we can have enough for Ron to both understand the process that was undertaken and to have a sense of what results were achieved, we can certainly convey that to the Work Group in time for the meeting and put them in a
better position to sign off on this.

CHAIR BEACH: Yes, I -- anything from you, Pete, on that?

MR. DARNELL: Yes. Right now, based in our, or on the talks that I've had previously with Pat and Mutty, there is no way we're going to get done with that far enough that, that the answer both of those questions for Joe before the November meeting.

MR. KATZ: Well, this is Ted.

MR. DARNELL: Unless, I mean --

MR. KATZ: I think what can be done is you get done what you can. Do what you can do. I think the Work Group can report out and again, I can, they can report out sort of a contingent recommendation.

And, raise this issue of this is the status of this work which you will have presented on, Pete, in your presentation, and the Board can consider that and decide whether it's comfortable going forward before it sees the results, the final results of that or not.
I mean, I really don't think the Work Group needs to struggle with this time limit here. Just, as long as the Board gets the full facts of where that stands and how that was done, and certainly Ron can review the procedure being applied. I mean, I think that’s okay and then the Board will do what it will do depending on their level of comfort.

I don't think this should, sort of, hang anything up here. And, it may hang up the Board at the end of the day, but it may not. But, we'll see.

CHAIR BEACH: Okay.

MR. KATZ: So, and just, Josie, before we wrap, let's just, so whatever assistance you need. I don't know if you have a plan yet. You see heard -- Pete will give a full, fairly full presentation on I mean, following up on the presentation he made, you know, way back when, but, sort of, concluding the NIOSH side of that.

Then you're welcome to, you know, use Joe or whomever from SC&A and do a joint
presentation or however you want to handle that.

CHAIR BEACH: Okay. I typically do slides and send them to Joe and he reviews them.

MR. KATZ: Oh.

CHAIR BEACH: And, so, Joe, we could do that. Probably, I'll do that again.

MR. DARNELL: So, Josie, should I plan on a full presentation or --

CHAIR BEACH: Yes. I'd say --

MR. DARNELL: -- have it be --

CHAIR BEACH: I would say yes because even if we don't come to a vote the next meeting, I mean, they will have all the information and it would be simply another report out from the Work Group on our conclusions and then we could vote at the next teleconference if ---

MR. KATZ: Right. And it, it just depends on how the Board is feeling about this. The Board may be comfortable going forward in this circumstance. Who knows. So, it's --

CHAIR BEACH: So, yes I would say prepare for a presentation.
MR. DARNELL: Okey-dokey.

CHAIR BEACH: Okay. Anything else? Any other comments or concerns for Work Group Members on where we're at? Thanks for your thoughts there Ted, that's helpful.

MR. KATZ: Sure.

CHAIR BEACH: So, we're on to petitioners concerns. And, are any of the petitioners on the line? I don't expect either Maurice or Wayne, but essentially you may have joined.

MR. KINMAN: Josie, this is Josh. They both told me that they probably would not be on. Mr. Knox could be on. I'm not sure, Maurice told me no.

CHAIR BEACH: Yes. I knew Maurice was not going to be, but I wasn't sure about Wayne, so.

MR. KINMAN: They just joined before the --

MR. KNOX: I was listening in.

CHAIR BEACH: Okay. Did you want to ask questions or speak, or did you have anything
or did you just want your statement --

MR. KNOX: I'm still --

CHAIR BEACH: I'm sorry?

MR. KNOX: I'm still at the same point.

It looks like you're looking at a lot of data and you're not looking at the reality of what happened. I was there. I lived in that world.

There was misrepresentation of data. We covered a lot of things up. But, you're just looking at what we said, did, which is a lie. And you will not allow me to stand in and say wait, this is really what happened. And, how many people actually were there? How many people got exposed?

I got exposed. I got contaminated. I cannot tell you what my radiation dose was and I was with Wayne all of the time. No one can.

And it's upsetting to me that I'm not allowed inject reality into this. The solution is a combination of available data and reality. But, reality was the dominant player in terms of the radiation exposure.

There are two major areas that concerns
me. One is the inclusion of all, all of the people who supported Kansas City operations in the SEC. That were GSA workers that physically went in that place and did work. They tracked contamination back to the other side. But, they're not included.

And the other thing is that, and keep in mind I worked there, we did not change things magically in 1993. It was still business as usual. I wasn't radiation sick. I was project manager and an operational healthcare assistant manager -- know what happened to me and the other workers. But, you will not allow me to inject reality in your discussions. I'm through.

CHAIR BEACH: Okay. Thank you, Wayne.

MR. KATZ: I have a Maurice's statement. Do you want me to read that, Josie?

CHAIR BEACH: Well, let me finish. I got one more part to this and then I'll have you --

MR. KATZ: Okay. Sorry.

CHAIR BEACH: Ted, if you don't mind.

So, on July 16th, the Work Group Members are aware
that we had a date set aside for the petitioners to come in and address the Board.

We did have one work product that was asked for us to provide. Mr. Knox asked for five different items. The only one that we could actually come up with and do and we got that out on September 30th was the time line of the radiography used at KCP and the procedures that were in place.

So, Ron spent some time, he created that document and that went out to the Work Group again on September 30th. So, we did that.

The other thing I want to point out is we had the conference calls on September 12th. That was because one of our petitioners asked us about a couple incidents and he wanted us to question a couple more workers. So, we went out and tried to find the three that he asked us to interview.

One of them we were unable to contact. The other two we got and then we had someone that we had missed on the earlier discussion. So, we
interviewed three people. And, that was a direct
result of petitioners' concerns and requests.

So, I just want to bring you up to date
on some of the things that we have done and tried
to do to come to terms with incidents and
petitioners' concerns.

So, Ted, I'll let, unless anybody has
any other comments on that or questions, then Ted
can -- and, you all have Maurice's email and
Wayne's.

MR. KATZ: Right. This is Ted. Assume since Wayne spoke, he doesn't want me to read
his, but I'm happy to read his comment if he wants
to as well. But, let me start with Maurice's
anyway.

MR. KNOX: I have no objection to you
reading it.

MR. KATZ: Excuse me?

MR. KNOX: Because, it is what I mean.

MR. KATZ: I cannot hear you. Excuse me?

CHAIR BEACH: He said he has no
objection.

MR. KNOX: I have no objection.

MR. KATZ: That's fine. That's fine.

I'll read it. That's what I just was saying. I'm happy to read it if Wayne wants to. I didn't know whether he --

MR. KNOX: I have no objection --

MR. KATZ: -- if he wanted to with his oral comment. But, that's fine. Let me start with Maurice's since it came first.

So we received this on Friday, October 23rd, from Maurice. My comment to the Work Group, please read to the Work Group.

I want the request to be decided one way or the other. But, I will not dignify this process with my attendance any longer. My attention is on the decision and at this point receiving records generated from my personal exposure incidents.

This Work Group has not been able to find out any information or locate a person involved in an incident of approximately just 16 years ago. How does this Work Group think it can
reconstruct over 60 years of exposure? Strange, I would say. Scientific, I don't think so.

All of our government agencies could not find [identifying information redacted]. What a shame. I found her. Pete Darnell of the Work Group has fabricated information of evidence at the Work Group meetings, contradicted himself many times and no one has questioned him at the Work Group meetings.

These games I won't play, shall I say, any longer. There are other exposure incidents I have questioned that have not been discussed, reference [identifying information redacted] (phonetic), [identifying information redacted] (phonetic), [identifying information redacted] (phonetic), [identifying information redacted] (phonetic) and myself. I'm waiting the decision. That's it. Maurice Copeland.

CHAIR BEACH: Okay. Ted before you go on, I'll just go --- I did ask Maurice to share [identifying information redacted] contact
information and he declined to share that with us.  

We were going to set up a conference call with her last week. So, we were unable to do that. And, we did contact and talk to [identifying information redacted] and [identifying information redacted]. Neither of them remembered the incident in question.

MR. KATZ: Okay. Thanks, Josie.

CHAIR BEACH: Yes.

MR. KATZ: So, then let me just work my way forward. So, Wayne, Mr. Knox has sent these comments, which I'll read now, from Monday of this week.

As a principal petitioner and author of SEC 210, I'm in complete agreement with [identifying information redacted]. I consider the actions of the Work Group and Advisory Board in general to be incompetent and not worthy of advising anyone much less the President on an actual or operational radiation exposures and practices.

They, including NIOSH officials,
clearly and knowing misrepresent obvious technical facts in violation of laws, regulations and our humanity.

NIOSH's and the Board's principal objective appear to be to protect the corporate liability associated with the criminal exposure of workers and second-hand exposures to family members and surrounding communities.

We, the nuclear workers, were perceived to have been fighting for our national security. But, rather we are now fighting for our lives. We are suffering and dying, yet criminally denied authorized medical care for increased corporate profits in developing patentable technology in the application of radiation and nuclear materials.

It was not all about the bomb for national security. All of these profitable corporate ventures were supported by the use of free public facilities and equipment and an uninformed group of disposable workers.

It was done under the cover of national security with a hold harmless indemnification
placed in the corporate back pocket by our conservatively installed career civil servants.

The complicit civil servants, now and then, attempt to hide behind self-regulatory authority, FOIA and the self-disclaimers of the actions of the offending contractors.

As a special graduate student, I had one-on-one studies directly under the father of health physics, [identifying information redacted], and as an operational health physicist working directly under [identifying information redacted] arguably, the father of operational health physics.

Both stated to me in different contexts and perspectives, quote there is no safe level of radiation exposure unquote. The question is, how much is the risk and how much can we minimize it. Prevention was not an option, if we wanted to explore the use of radiation and radioactive materials for the betterment of mankind.

We, nuclear workers, I knowingly and others without knowledge or consent, were placed
at risk for an indecipherable combination of national security, national interests and corporate profits.

When the risk prevailed and allowances are authorized by Congress under EEOICPA and supported by the Clinton Executive Order 13179, we expect and demand quote compassionate, fair and timely unquote treatment as directed.

This must be done without regard to sex, race, religion, worker class, political affliction, lifestyle preferences or shared government corporate liability. Wayne Knox.

That concludes Wayne's statement.

CHAIR BEACH: Thanks, Ted. Okay. Any other comments or other Work Group Members? And, I have a question for Ted, then. Can I go ahead and ask SC&A to update the matrix? I know it's very minor.

MR. KATZ: Yes. Absolutely. I mean it's nice to button it up. Right?

CHAIR BEACH: Okay. And, then the other thing, Pete sent out a Site Profile matrix
on 8-20-15. There is a Site matrix third version, original matrix that SC&A did.

Is it too early to ask SC&A to incorporate Pete's matrix into the one that was created in, I can't remember what the date is now?

MR. KATZ: I think that will be good just so that when we have the next meeting, we'll add it to TBD issues. We're fresh up to date with that.

CHAIR BEACH: Okay. Joe, you okay with that?

MR. FITZGERALD: Yes. It's fine. I will consolidate and update the original matrix. It'll look a lot like Pete's from about a month or two ago, but.

CHAIR BEACH: Sure.

MR. FITZGERALD: Do you want a separate Site Profile matrix or do you want to still use the same one?

CHAIR BEACH: No. Let's do a separate one.

MR. FITZGERALD: Separate, separate
one. Okay. So, we'll have a second one that'll be exclusively Site Profile.

CHAIR BEACH: That'd be great. And, then, so let's be clear. The action is just for NIOSH on the dose reconstruction for the thorium method. SC&A to update the matrix and the Site Profile, to update the Site Profile matrix.

MR. KATZ: Yes. And you may want, Joe, to just hang on before producing that Site Profile. Hang on and wait for this latest piece from --

CHAIR BEACH: Yes.

MR. KATZ: -- NIOSH on the data validation.

CHAIR BEACH: So, update it but don't distribute it until the latest is done.

MR. FITZGERALD: All right.

CHAIR BEACH: That seem reasonable?

MR. FITZGERALD: Yes.

CHAIR BEACH: Okay. Did I miss anything or we all set? Thank you --

MR. DARNELL: Thanks all.

CHAIR BEACH: Oh. Go ahead Brad.
MR. KATZ: That was just Pete saying thanks.

CHAIR BEACH: Oh. Okay. Sorry. I spoke over you. So, I guess we can close this meeting. Thank you everyone.

MR. KATZ: Thank you everybody.

(Whereas the above-entitled matter went off the record at 3:13 p.m.)