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ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

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MOUND WORK GROUP

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MONDAY
NOVEMBER 7, 2011

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The Work Group convened in the Zurich Room of the Cincinnati Airport Marriott, 2395 Progress Drive, Hebron, Kentucky, at 9:00 a.m., Josie Beach, Chair, presiding.

PRESENT:

JOSIE BEACH, Chair
BRADLEY P. CLAWSON, Member
PHILLIP SCHOFIELD, Member
PAUL L. ZIEMER, Member

ALSO PRESENT:

TED KATZ, Designated Federal Official
ROBERT BARTON, SC&A*
RON BUCHANAN, SC&A*
MEL CHEW, ORAU Team*
JOE FITZGERALD, SC&A
DEB JERISON*
KARIN JESSEN, ORAU Team
JENNY LIN, HHS
JOHN MAURO, SC&A*
ROBERT MORRIS, ORAU Team*
JIM NETON, DCAS
WARREN SHEEHAN*
JOHN STIVER, SC&A
BRANT ULSH, DCAS

*Participating via telephone

I-N-D-E-X

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

9:01 a.m.

MR. KATZ: Good morning everyone in the room and on the line. This is the Advisory Board of Radiation Worker Health, Mound Work Group just getting started and beginning with roll call, Board Members beginning with the Chair in the room, and please speak to conflict of interests since we are speaking about a specific site.

(Roll call.)

MR. KATZ: Very good. We have an agenda posted on the NIOSH website under the Board section, as well as some of the documents that we are going to be discussing today, or most -- most if not all should be posted there as well.

And let me just remind everyone on the line to mute your phone except when you are addressing the group. Press *6 if you don't have a mute button. That will mute your phone. Press *6 again and it will unmute your

phone for when you want to speak. And please don't put your phone on hold at any point, but hang up and dial back in if you need to leave the call at some point.

It's your agenda, Josie.

CHAIR BEACH: Okay, thank you. Like Ted said, the agenda is posted on the website. We plan to take probably a quick break between 9 and noon, lunch at noon, and I assume we have a fairly full schedule but we may be finished by -- between 4 and 5 today.

I am going to give Work Group -- or not Work Group, excuse me -- claimants or members of the public an opportunity to talk during some of our discussion today.

We are going to first start with radon, and radon if you remember was issue number 2 for this Working Group. We added an SEC Class for radon at a full Board meeting in May of 2010. That was our Idaho meeting.

Since that time there have been several concerns from claimants over the log

book and not being complete and DOL not accepting alternate proof of the required tritium bioassay sample.

So it's my understanding the concerns over the Class Definition may be why we brought radon back on to our agenda item. However the Work Group did not request further work to be done post-1980 for either NIOSH or SC&A.

And for the record, I am just wondering, Brant, if NIOSH could explain the basis for the October 2011 radon issues paper, just so we have a clear understanding before we get started into any more discussion.

DR. ULSH: Yes, that makes good sense. We discussed the Class Definition for radon extensively at the Niagara Falls meeting. I can't remember when that was. It was the spring of --

CHAIR BEACH: It was May.

DR. ULSH: May.

CHAIR BEACH: Oh, no, sorry that

was before then.

MEMBER ZIEMER: It was earlier than that. It was like February.

DR. ULSH: Okay.

MEMBER ZIEMER: Well, anyway.

DR. ULSH: At that meeting, there was some discussion back and forth about defining the radon class by tritium bioassay.

Just to kind of refresh everybody's memory here at the table, and those on the phone, the situation with radon is that Mound conducted some radium-actinium-thorium separation activities early in the 1950s.

And to make a very long story short, there was some residual material left over from those activities that remained, and it was discovered in 1979 that one worker showed up for a whole body count, and he got some strange results.

So the ensuing investigation determined that there -- this worker had an

office on top of the Old Cave where those earlier separation runs had occurred, and that there was a crack in the floor near his desk and they discovered radon streaming out of that crack in the floor.

And they did a lot of measurements, you know, in different places around there, but that was the basis for determining, for defining that original radon Class, because we decided that we just really could not reconstruct the radon dose for that worker, in I think it was SW-19.

So then everyone around the table here had some discussions about well how do we really get our arms around defining this Class.

And I think SC&A in particular had some concerns based on an earlier interview that they had conducted, regarding the extent of possible radon exposure.

The source of the radon exposure was a tunnel that ran under the room where

this worker's office was located, and there was some discussion about what was the extent of that tunnel.

We didn't really know at that time and there was some concern that that tunnel might have gone on into the R building and posed an exposure potential for more workers than would be captured by the Class as we defined it.

Well, the problem was, at the time we were having those discussions, NIOSH, meaning me, stated that the Class Definition based on tritium bioassay would capture anyone in R and SW buildings because everyone was required to be on tritium bioassay.

So the discussion really kind of ended there. We went ahead with the Class definition. Subsequently to that, some information provided by members of the public demonstrated that in fact not all of the R building was an area that required tritium bioassay.

So that was the genesis for NIOSH to initiate the October report, because we committed to the Working Group that if new information came in, we would revisit the issue.

DR. NETON: And I think just to clarify, in reviewing the transcripts, it appeared to us that the discussion by the Working Group was cut short once we declared that everybody in the R and SW building were monitored. Therefore it really didn't matter how far that tunnel extended.

DR. ULSH: Right.

DR. NETON: So that was the basis of why we chose to review this whole program, because it was really never discussed fully at the Working Group level what the exposure potential could have been for workers in the entire R building.

DR. ULSH: So that was kind of the reasoning behind our report. Now, do you want to discuss that Josie, or do you want me to go

into the report?

CHAIR BEACH: I think we should.

DR. ULSH: Which?

CHAIR BEACH: No, you should discuss that, yes, please.

DR. ULSH: All right.

MEMBER CLAWSON: One thing, this is Brad from the Work Group, it kind of took me aside when all of a sudden I saw this report because I had no background for what it was for, where it was coming from.

I think in the future, as these things come up, it would be nice if you would kind of let us know where we are going at it, so we know what we are doing.

You know, we had some questions before on how radon was and the answer was cut short because it was the R and S building and it seemed like everything was kind of changing a little bit on us and I didn't really understand why until Joe kind of sat down and explained what his understanding was to us.

So in the future, it may be good just to let us know, this is going to come out.

DR. ULSH: Well I apologize that you had some -- that that caused some confusion. It is described in the introduction of the report, why we were writing it.

However if that wasn't sufficient to avoid that confusion, maybe we should have taken additional measures and --

MEMBER CLAWSON: Well, even that the report was being written, because I thought we were done with it, to tell you the truth.

CHAIR BEACH: And I also think the confusion -- there were several things going on. At our February meeting we were hearing from claimants and I know I had some conversations with Stu about re-bringing it to the Work Group.

But we never really knew what was coming until we got this report. So my

understanding, it was the Class Definition problem, or DOL was having trouble administering the Class.

So this, this does clear up some of it, but it just left -- left a lot of things in question also.

DR. ULSH: Well again, there were a lot of developments going on, like you said, after the action at the Niagara meeting, and we decided that since we were going to revisit this issue anyway, because of the tunnel, the extent of tritium urinalysis data, we should cover all the issues that were in play at the time in one report rather than piece it out.

So, okay, I understand what you are saying, that we could have perhaps communicated to you ahead of time that this report was coming and what was going to be in it. But that was our thinking behind doing the report.

CHAIR BEACH: Okay. Any other questions that -- for this -- are you ready to

start in on the report then?

DR. ULSH: Sure. As I mentioned just a minute ago, one of the issues that became again relevant, at least in our opinion, was the extent of the tunnel that went under the office in SW-19, from which the radon was leaking.

SC&A had raised some questions about the extent of that tunnel. So since that issue came up again, and we decided it was still in play, I did some further research, worked with some former Mound workers and to make a long story short, I worked with one of those workers who has a connection with the Mound museum.

They have in their possession a collection of historical drawings, blueprints, and with his assistance, I went and pulled the original drawings for that tunnel.

And it showed conclusively that the tunnel went under the SW building where this worker's office was, and it went from

there to the fan house and up the stack. It did not proceed further into R building.

So that was one of the questions that was still in play, and I have presented that in my report, some excerpts of the blueprints.

The full blueprints concerning the entire building are in the SRDB, Site Research Database, and the references are provided in the report.

So that was one issue. Another issue that was in play was the source of the radon that was observed at Mound and there was some question about that.

The workers that we had talked to, and I think the workers that SC&A had talked to as well, stated that they were told, or it was their belief or their observation, that the source of elevated radon around the Mound site was from the coal plant operated by Dayton Power & Light that was situated in the Great Miami River Valley, just upwind from

Mound, was the source of that radon.

So we treated -- or we addressed that issue in this report as well. To make a long story short, again, it's I think reasonable that that source could have contributed to elevated radon at Mound. I certainly have no conclusive evidence to say those workers were wrong.

It's also evident, however, that the source that we are talking about, underneath the Old Cave, contributed to elevated radon at least in localized areas.

And so the question -- it appears there was a combination of those two. So I provided some material in the report. There are some photographs that kind of provide some perspective about where the coal plant is in relation to the Mound site.

And again, I think the important thing here is that we are not taking a position that it was all the coal site, or the coal plant that contributed to Mound radon.

We are simply saying that's what the workers said. It's a reasonable conclusion that it could have contributed. But we are not saying that that was the only source.

And so then once we determined the extent of the tunnel under SW-19, then we wanted to address the question, do we need to change our Class Definition.

Now, it's perhaps not intuitively obvious why we are talking about tritium bioassay when the Class is based on radon exposure.

The thinking behind that was in the area where we observed radon exposure, SW-19, it was an area that required tritium bioassay.

So by saying workers who had tritium bioassay, we would capture anyone who could have been exposed in SW-19.

CHAIR BEACH: Can I ask you a question then?

DR. ULSH: Fire away.

CHAIR BEACH: So I understand that tritium bioassay -- does it have to be a positive assay or does it just have to indicate the person was bioassayed for tritium?

Because there has been some question from claimants if they have zeroes, they are not getting compensated.

DR. ULSH: It's the latter. It's only tritium bioassay. It does not have to be positive.

CHAIR BEACH: Okay.

DR. ULSH: The issue that you mention is another issue that we talk about in the report.

CHAIR BEACH: Right, right.

DR. ULSH: So we fully understood at the time that we defined the Class this way, that we would be capturing people who gave tritium bioassay, who never visited SW-19. They didn't have an exposure.

The problem is, we have no way to define the Class as only people who were in SW-19 for 250 days. We can't identify who those people --

CHAIR BEACH: Other than saying all workers at Mound, which expands it.

DR. ULSH: Right, that would be a broader definition beyond what we have proposed.

So, given the new information about the extent of the R building tunnel, we revisited the adequacy of our Class Definition based on tritium bioassay.

We also looked at the new information that was submitted by the public and we went back and looked in more detail what areas of the R building did require tritium bioassay.

I don't know if it would be helpful if I sketched real quick. Yes, why don't I do that. I apologize to those of you who are on the phone -- those of you who are

on the phone won't be able to see this.

Just roughly, because my artistic ability is very limited, this is the SW building. Roughly, SW-19 is down in this area. The workers' office was here. The tunnel ran along here and then down to the stack; the fan house that led to the stack.

The R building is attached to the SW building. So its designated as two buildings but they are joined. And this is the R building.

So we determined the tunnel does not go into the R building. Now originally I had said that this entire complex, R and SW, required tritium bioassay.

That turned out not to be the case. The new information that we got showed that really it was only the part of the R building that adjoined SW that required tritium bioassay.

This area over here did not always require tritium bioassay.

MR. FITZGERALD: Just a quick question. Is there a free passage or is there an airlock or some kind of a control between the two parts of R?

DR. ULSH: There's negative pressure.

MR. FITZGERALD: There is a seal between the non-tritium and the tritium in R.

DR. ULSH: Well, I'm not going to tell you Joe, that not a single of molecule air passed between them.

MR. FITZGERALD: No, no, no --

(Simultaneous speaking.)

MR. FITZGERALD: Is the tritium controlled such that you have to go through some kind of barrier to go from the non-tritium into the tritium?

DR. ULSH: Yes, they did have doors, you know, doors that separated the two, and the airflow was from the hallways into the laboratories.

So yes, I understand what you are

saying. Could air have exchanged between SW and R? I'm not going to say that that didn't happen in a building this big and complex. But in general, the airflow I think was towards the SW building.

CHAIR BEACH: What about when they started D&D and changing the airflow and changing that type of --

DR. ULSH: So what time period are we talking, like the '90s or '80s?

CHAIR BEACH: Post-'80s.

DR. ULSH: Well, I know that they did smoke tests. But keep in mind that by that time, this source had been remediated as described --

CHAIR BEACH: Okay.

DR. ULSH: by that worker that --

CHAIR BEACH: But what year was it remediated, just remind me?

DR. ULSH: Well, at the conclusion of the radium-actinium-thorium separation they did a round of remediation, and that was in

the late '50s. The problem is that there was still some residual material.

CHAIR BEACH: Right.

DR. ULSH: So I think the remediation that you are talking about, that we discussed, were they went in and put a stack in to vent this tunnel. That occurred in late 1979, early 1980.

CHAIR BEACH: I remember now. Thank you.

MEMBER CLAWSON: Now, Mark, or

DR. ULSH: Brad.

MEMBER CLAWSON: Brant, or -- part of that hot cell was -- there was a hot cell for that level, correct? Or was it just the tunnel?

DR. ULSH: I'm sorry, say that again.

MEMBER CLAWSON: Wasn't there a hot cell that tied in as part of this?

DR. ULSH: There -- in this area of SW-19.

MEMBER CLAWSON: Okay.

DR. ULSH: SW-19 was an office that was established on top of the Old Cave facility.

MEMBER CLAWSON: Okay.

DR. ULSH: The Old Cave existed in, well in the 1950s, and that contained a hot cell that you are talking about. That was remediated in the '50s. They poured concrete in, and they established SW-19 on top of that.

MEMBER CLAWSON: Were they using the airflow from SW to support the R building? If you are saying that it has gone out of stack -- this is something that we get into all these -- in the earlier years, DOE would build a building like SW and then add onto it, and all they are doing is tying into the existing airflow systems to it.

So when you have got one that is at a negative flow, you are pulling -- you have got some -- you have got a lot of pull that is going to be coming in there.

How is the airflow set up on, I guess, R is what I am mainly looking at, what I am trying to figure out.

DR. ULSH: Okay, I am going to be very general here.

MEMBER CLAWSON: Okay.

DR. ULSH: In general, air was pulled from the SW building into this stack. This stack also serviced the R building, in that R -- air from the R building was pulled into this stack and blown up this stack.

Does that answer your question?

MEMBER CLAWSON: I'm just trying to figure out which one is the major one that has the pull, as we call it, because you have got to understand how to keep those at negative pressure and how the venting systems work.

DR. NETON: Well Brad, I think what Brant is showing is the source term was -- the stack was very close to the source term, which was that cave that was contaminated.

So I don't know that we know of any residual contamination in what I would call the cold side of the R building from radium, radon activities.

DR. ULSH: The cold side --

CHAIR BEACH: So let me make sure I get this straight. Anybody that worked on let's say the cold side of R did not have a tritium bioassay?

DR. NETON: It was not required

CHAIR BEACH: It was not required.

DR. ULSH: The work that they did in this part did not require tritium bioassay.

MEMBER ZIEMER: If they worked somewhere else --

CHAIR BEACH: So if they supposedly only worked on the cold side and didn't have a tritium bioassay, how do we know that they didn't work -- cross over every once in a while?

DR. ULSH: Good question. The reason that we know that is because entrance

into the SW building and this part of the R building required tritium bioassay.

CHAIR BEACH: So we are 100 percent sure that nobody entered that side without a tritium bioassay.

DR. ULSH: No. We are never 100 percent sure of anything like that.

CHAIR BEACH: What percentage though? I get -- because we are excluding anybody that didn't have a tritium bioassay, and saying that if they didn't have one, then they weren't -- they weren't in SW and couldn't have been exposed to the radon.

DR. ULSH: We know from our interview with former workers that that area was posted. You know, could someone have gone in to deliver a letter and go back out? Yes, it's possible. It would have been contrary to the posting requirements but it's possible.

The real question is, could someone have gone in here and spent 250 days without giving us a single tritium urinalysis.

Is it 100 percent impossible? No. But it's not plausible. That's what the workers told us.

CHAIR BEACH: Okay.

MEMBER CLAWSON: Well, yes, but also in talking with the workers too we have come to find out that a lot of the maintenance people were going from one side to the other and when they were talking about tritium bioassay, it was people that was continuously in there.

And they were going in and they'd change out glove boxes, they were doing all this other stuff, changing out fan motors or whatever else like that, and some of them have already mentioned that they weren't on the tritium bioassay, unless then they got assigned full-time to SW.

DR. ULSH: That is a different account than I have heard, Brad. If you have got access to interviews that say that they spent any significant amount of time in here

and were not subject to tritium urinalysis requirements, that's news to me.

MEMBER CLAWSON: Well, this was just from the interviews up to now, because the construction worker -- not construction = but the maintenance people went all over the site, and they had certain ones that were assigned to certain buildings, specializing in certain parts of it, and those fell in to the tritium bioassay.

The other ones said, you know, we'd go in, we'd support projects and so forth like that, and then we were back out and we didn't have to do that.

DR. ULSH: So you're talking about the rovers that were maybe assigned to a centralized maintenance facility and just went into here for a job and left.

MEMBER CLAWSON: Well yes, but some were -- but they could be there for quite a while. I guess one of them that got into this was -- on the outside of that building

you've got a power source that goes into the building but they were rerouting the power supplies into it, and they had to go into SW but they didn't have to submit any bioassays or tritium samples. They were actually inside the SW building putting in the power lines.

The point that I'm trying to get to is, I work in these facilities. I understand how the roving work forces work. We have got one main shop that most everybody works at. I've got a small group of maintenance people that work just for me.

And they are on all of our requirements, the other ones aren't. And that's what makes me nervous about this and I raised this before when we were getting into this. So you are right. We can't be 100 percent sure one way or the other, but I want you to realize that that's -- that's where my issue lies with this.

DR. ULSH: I understand what you are saying. I understand that your concern is

the rovers. Keep in mind a couple of things here. We are talking about the time frame before 10 CFR 835 is it Jim?

Under 10 CFR 835, which I am sure you are very familiar with because it's contemporary, you are only to be monitored if you have a potential for a 100 millirem exposure per year.

That requirement was not in effect in the time frame that we are talking about here. The interviewees, at least that I am aware of, that we have talked to, said that if you went into this building for any extended period, for any work that would have even approached 250 days, you would be on tritium bioassay requirements, and that is not just a on-off. This is a couple of times a week. And it only takes one to put you in the SEC.

Now if your level of --

MR. SHEEHAN: Brad?

DR. ULSH: Yes.

MR. SHEEHAN: This is Warren

Sheehan.

DR. ULSH: Hey Warren.

MR. SHEEHAN: I want to answer something here though I think that Brad has brought up that's missed. The rovers that he is talking about, if they went in to do a job, they were on a work permit, and the work permit required them to get a urine sample.

These were guys that were not assigned to the building, okay, but would visit, and if they went in there for any kind of work, then the work that -- the health surveyor would check off if they had required a sample.

Now this doesn't address the outside electrician that went in that Brad talks about. That doesn't address that issue but I believe it does the other issues, okay?

CHAIR BEACH: Thanks Warren.

MR. KATZ: What's Warren's last name, I'm sorry?

CHAIR BEACH: Sheehan.

MR. FITZGERALD: Sheehan.

MR. KATZ: Thank you.

DR. ULSH: The other issue that you mentioned Josie, was the interpretation of the MESH report but do you want to discuss this further before we get into that?

CHAIR BEACH: Yes.

DR. ULSH: Okay.

MEMBER ZIEMER: Well, why wouldn't the electrician have been on a work permit? I didn't quite follow what the argument was there.

DR. ULSH: I didn't either. Hey Warren?

MR. SHEEHAN: I'm back on. Well, when you have people on the outside of the building, in other words, I don't know -- this is way beyond the period that -- I don't know when this occurred Brad. This was probably in the D&D phase, was it? I don't know.

MEMBER CLAWSON: Well, one electrician that I talked to was talking about

how the power supply went in there and you could actually gain access to the main feed into the facility from the outside. There was supposed to be a door on the outside that you actually went into.

But part of the problem was, was when they started pulling electrical cables back out of SW, and so you know, this possibly could have been in later years and so forth.

But I just wanted, you know, there's always exceptions to all the rules.

MR. SHEEHAN: Well, whether or not this was on a work permit or not, that's kind of the crux of this matter, whether or not that job was covered by a work permit, and all the jobs in radiation potential areas were covered by work permits, so that's about where -- that's where we have to leave it I think.

DR. ULSH: So without knowing the details of the particular interview or situation that you are talking about Brad -- I don't know when it occurred or exactly what

the details are -- if it occurred in the D&D years after tritium work had ceased, and in the era of 10 CFR 835, it's entirely possible that someone could have gone in without tritium bioassay. I just don't know the details of what you are talking about.

MEMBER CLAWSON: Well, and to tell you the truth, these interviews, until we started getting into this deeper, it didn't make any -- you know, it was just listening to what they did.

But then when you started laying this out, to me it started making a little bit more of a question.

DR. ULSH: A couple of other factors to keep in mind -- this was also a plutonium facility so it was operated under negative pressure.

You didn't want plutonium blowing out of this building into the environment. You wanted air to be sucked in, to go through the filters.

So if you have got a guy working on the outside of the building, I'm not going to say it's absolutely impossible that he could have encountered contamination. Just in general, the idea, it is to operate this under negative pressure.

Now the other thing -- you know you have got maintain some perspective here. The situation that we are talking about, where the one guy was working in SW-19 sitting at his desk, they took measurements at the crack and they took measurements in the breathing zone of his desk, and they already observed a factor of 10 decline in radon exposures.

Now, there's a lot of uncertainties there, and that's the basis of us saying that it's an SEC. But I think you can at least look at the general trend and say there was a big decrease. Why? Probably because of dilution, because of decay of short-lived radon species.

When you then go beyond, not just

from the crack to his desk but from the desk to the entire room, from the room to the entire building, can we really say that radon was sufficiently high to endanger somebody's health?

They even did measurements right in this area and found low radon or no radon.

MEMBER CLAWSON: How many radon samples do we have?

DR. ULSH: Well, I spoke to you in Niagara Falls, I gave you a set of measurements that were associated with that remediation activity.

I can tell you that they operated radon monitors throughout this building as required. I can't really describe to you the entire radon sampling network. I don't know --

MEMBER CLAWSON: I was just wondering because I only remember a couple of samples by the crack, and that was about it.

DR. NETON: Right, well that's

where they discovered the source term. I mean, you've got to look at the source term that we are trying to cover here, and that's -- essentially that crack in the floor there. That's what brought up this whole Class.

MR. FITZGERALD: But that was about it in 1980.

DR. ULSH: Right, that was -- the basis of the Class was that we didn't have radon sampling measurements between the first remediation of the cave in 1959, and then this crack was discovered in 1980. We didn't have radon measurements. That's why we said we need to designate an SEC here.

But when they remediated this, and then there was at least one or two rounds of post-remediation sampling, they didn't observe those higher radon concentrations anymore.

In addition to that, they had radon measurements throughout this building but I can't really characterize those off the top of my head.

MEMBER CLAWSON: The corrective action for this tunnel was to actually vent it, because that's what we believe was the issue, was that they actually sealed the tunnel off at the start, creating radon inside --

DR. NETON: They also sealed the cracks though, I believe.

DR. ULSH: Yes they did.

DR. NETON: And most of the high activity was related to radon-219, which has like a 55-second half life. That's what really was sort of perplexing or confusing to folks when they first started taking these measurements.

CHAIR BEACH: Ready?

DR. ULSH: MESH.

CHAIR BEACH: Sure.

DR. ULSH: Okay. As Susan mentioned earlier, there's been a lot of confusion about interpretation of a particular report in the MESH database.

In particular I think it's called the MESH Tritium Report or something like that. It's a standardized report that goes into claimant dosimetry files, to worker dosimetry files.

And the confusion is that in those columns, you sometimes see a 0.000 and it's typically dated in September of the calender year.

And some have interpreted that to mean see, I had a tritium urinalysis, it wasn't positive, but I had one. I should be in the Class.

DR. NETON: It was actually reported a tritium dose, right? That column was not a tritium bioassay result. It was a tritium dose.

DR. ULSH: Correct.

DR. NETON: And it was listed as 0.000 as a dose for the year.

DR. ULSH: Right.

DR. NETON: Tritium.

DR. ULSH: Right. So I think the correct interpretation of that number is a legitimate concern. The situation is, what we discovered, and that's one of the things that we reported on in our report, our latest report here.

During the time period in question that we are talking about here, when these numbers applied, Mound, like many other sites across the DOE complex, considered tritium to be a whole body dose, because tritium goes throughout the body. It's not just concentrated in one area, one organ.

In addition, external dose, the kind that you measure on a film badge, or a TLD, is a whole body dose. So what Mound did and many other sites did, they combined tritium and external dose into one whole body dose and they reported that as a combined number.

So when you look and you see a number in that column, it could be that the

person was monitored for tritium and had a negative dose. That's one possible interpretation.

It could be that that person had external dosimetry and did not have a positive reported dose. It could be both. Just looking at that number, you can't tell what the situation is.

One situation, if it was a tritium dose, they would probably qualify for the SEC. The other situation, if it was just external, they wouldn't automatically qualify for the SEC.

So how do you resolve it? Well, the way that we have approached data every other time, is we go to the primary data source.

The primary data source in this case is the Mound tritium log books. This is where the internal dosimetry folks at Mound, when they collected tritium urinalysis results, they recorded them in these log

books.

Now from there, throughout the history of Mound, they were transcribed into computer databases, eventually winding up in MESH.

And in the past we have had to spend some effort looking at the transfer of that data from the original source in the log books to these various electronic databases and was anything missed, was it done correctly, we have examined that.

That's why we always try to go back to the primary data source when we can, when it's readily available. In this case the tritium log books were readily available. We captured them. We coded them.

And that was the genesis of the list that we made of individual workers who had given tritium urinalysis results.

Now when I say log books, don't get too hung up on that, because there were some periods of time that they weren't log

books -- they were typed sheets or various different hard copy forms. So basically I am talking about hard copy, original hard copy data.

So as long as we were looking at this radon issue again, we took the opportunity to go back and double check and make sure that there were no chronological gaps in our collection of hard copy tritium urinalysis data.

Well unfortunately we discovered that there were a couple of gaps within the report. There were a couple of years I think, what '74 and --

CHAIR BEACH: September 1, '72 through December 31, '72.

DR. ULSH: So the last quarter of '72.

CHAIR BEACH: And then the two-year period January 1, 1975 through December 31, 1976.

DR. ULSH: So for those two time

periods, we did not have the original tritium urinalysis data. Therefore we are proposing, and this has not been acted upon, we are proposing to the Working Group and the Advisory Board, that for those two time periods we expand the Class Definition to include all workers because that was our means of determining who could have been in SW-19, was that data. We don't have that data for those two time periods.

MEMBER ZIEMER: Just a procedural question here. If we proceeded with this proposal, does that require that you revise the Evaluation Report or --

DR. NETON: I think it's more than that. I think it would have to be --

MEMBER ZIEMER: Because this looks a little bit like an 83.14 almost.

DR. NETON: I believe that would -- I haven't thought about this, but I would think that it would need to be 83.14 because we have already opined as to what our position

is. The Board has acted on it. We are now recommending a change in the Class and to change that Class Definition then we would have to go through the 83.14.

MEMBER ZIEMER: And that's for this particular period.

MS. LIN: And it's a different basis for having this Class. So you know --

DR. NETON: It's changed the basis for the Class. You'd essentially have to add an additional Class.

CHAIR BEACH: Will you be ready for that a the Board meeting in December?

DR. ULSH: Don't know. It depends on your recommendations.

MEMBER ZIEMER: Well, I don't know. Let me ask the Chair. It seems to me that we could go ahead and act on it. But it's out of sequence because we don't have a 83.14 request --

CHAIR BEACH: It is.

MEMBER ZIEMER: We have -- we have

the report, which --

DR. NETON: Let me sort of back up a step though, because part of the resolution of this problem depends on whether this original argument that Brant proposed about the R building, if that holds, if that doesn't hold then we have got a whole separate issue.

CHAIR BEACH: Okay and so let's not talk -- let's not go to that until we hear from SC&A and hear from any petitioners that -- or claimants that have questions.

MEMBER ZIEMER: Right, I just wanted to get a feel for process-wise, what would --

CHAIR BEACH: You stole my thunder because I was going to ask --

(Simultaneous speaking.)

MR. KATZ: Just to be clear I mean, you wouldn't -- the Work Group wouldn't be making a recommendation until the Board meeting and at that point you would have an Evaluation Report on the table and so on.

CHAIR BEACH: Right.

MR. FITZGERALD: Can I ask a clarifying question? What's the status of the current SEC Class? Is that being implemented as we do all this? So this is not holding anything up?

MR. KATZ: No, it isn't.

CHAIR BEACH: It's only holding up people in that time frame.

MR. FITZGERALD: In that specific time.

CHAIR BEACH: Okay. Well, and I was confused. I know I sent Jim a couple of emails saying okay what exactly is this Work Group supposed to do here.

DR. NETON: So I think it's pretty clear at this point I hope --

CHAIR BEACH: Yes, it's much more clear.

DR. NETON: We need to decide whether this new finding about the R building monitoring status changes the Working Group's

opinion on the validity of the Class as it currently is defined.

Then we can take up the issue about the 83.14 with the missing bioassay if that --

CHAIR BEACH: Well, and let's be clear. Let's be clear. The Class Definition that is existing right now, the original one, that is not changing. You are still going to say R and SW as --

DR. NETON: Well, no, see here's the situation. We actually have -- this has -- brought this up, and I think Brant said a member of the public, it's actually a claimant --

CHAIR BEACH: Right.

DR. NETON: Had clear, demonstrable evidence that he had worked in the -- the person had worked in the R building and had no tritium bioassay and our response was well how could this possibly be?

And then we dug into this. So

that person was denied membership in the Class because they didn't have tritium bioassay yet they had worked in the R building and through subsequent review, we realized they had worked in the -- what I call the cold portion in the half that was not contiguous with the SW building. So --

MR. KATZ: So another, just timing question, is have you located a claimant whose dose reconstruction you can't do through the 83.14 process?

DR. NETON: I don't think we have gone down that path. I mean it's sort of like a --

MR. KATZ: It's a pretty, that's a pretty narrow, well -- the final claimant that I --

DR. ULSH: Well, the original --

DR. NETON: No, he would not be eligible. That person would not be eligible. If this went forward, anyone who worked on the --

DR. ULSH: Oh, right, right --

DR. NETON: What I call the cold side of the R building, the non-tritium-monitored side of the R building would not be -- would not have tritium bioassay and therefore would not be a member of the Class.

DR. ULSH: You know, I think it would be a little bit premature for us to get that far down the 83.14 road when we don't yet know what the Working Group is going to do.

DR. NETON: I mean we could try to identify that there might be people out there, but I don't think we've done that.

MEMBER ZIEMER: Well and the other thing is that someone whose work may have spanned that area may already be in the SEC, because that's a pretty narrow band they're already covering before --

MR. KATZ: And so they wouldn't be a claimant for whose dose reconstruction you can't do unless they had a cancer that's not covered by the SEC.

MEMBER ZIEMER: Right.

MR. KATZ: So that's what -- I only raise it only on a timing issue because they'll have to identify a claimant through the 83.14 process --

MEMBER ZIEMER: It's not like someone's waiting for a dose reconstruction.

MR. KATZ: So whether December timing works depends in part on that, if everything goes forward as they are suggesting.

DR. NETON: Well, let's put it this way. I suspect that there's a lot of people that could have worked at Mound in those two years, never have been in that building and then be -- all of a sudden become members of the Class. See even though it's only a two-year period, that opens it up to the entire site being eligible for the SEC. I think there's probably a reasonable chance that someone has been denied membership in the Class because they don't have tritium bioassay

but they worked in 1973 and '74, which would make them eligible under this proposal.

I think there's probably more people out there than you would think. I don't know.

MEMBER CLAWSON: Mark, on -- how are you going to be able to distinguish for not the years, the people that worked on the cold side of R.

DR. NETON: I don't think you'd have to. They just wouldn't have tritium bioassay samples.

DR. ULSH: Right, what we're proposing, with the exception of those years where we have no original tritium urinalysis data, with those exceptions, we are not proposing a change in the Class Definition. We are proposing that the Definition, as is, is appropriate based on tritium urinalysis data.

Now the exceptions that we mentioned are when we don't have that data,

and we're saying include everybody because we can't narrow it down.

DR. NETON: Because the original Class Definition said nothing about the R building.

CHAIR BEACH: No it did not.

DR. NETON: It just said anyone who was monitored for tritium.

CHAIR BEACH: And I think the reason for this confusion is we went -- we had like four or five different --

DR. ULSH: Yes.

CHAIR BEACH: -- versions of the Class Definition when we voted on it. We were scrambling. At one point it said R and SW.

DR. ULSH: It did.

CHAIR BEACH: The letter that went to the Secretary said R and SW, but if you look at the actual definition that was --

DR. NETON: Well, the definition didn't say R and SW, but you are right, in the logic --

CHAIR BEACH: Logic, yes.

DR. NETON: -- discussion, the rationale of adding the Class, it talked about the R building being monitored and that is something we also need to take up with OGC about what that means in modifying that original -- or not -- original discussion that went to the Secretary's office.

MR. FITZGERALD: Yes, if I can jump in.

CHAIR BEACH: Yes.

MR. FITZGERALD: That's kind of where I was coming from too, that you know, we had in the original Site Profile as Brant was mentioning, you know we raised it early on back when we interviewed somebody and we were trying to get a sense of the scope of this thing.

And SW-19 was the easy one. That was clearly a problem in terms of influx. But we did get this one interview that seemed to indicate there was some entry at the R

building.

And you know, being a Site Profile, we didn't spend a lot of time trying to you know, dig -- you know we had a set of interviews, we got that data point and we brought that to the Work Group.

And you know I think that was represented fairly accurately. We didn't really pursue that any further. We sort of focused on the implications of radon coming in and you know, whether or not it was dose reconstructable, and that kind of proceeded.

And certainly in the final discussions, it didn't really get addressed either, I mean it was just sort of assumed there was an entry point based on that, that could have included R. R and SW was contiguous. I think Jim, you brought up that you know, people did move from the R and SW. Now we know it's clear they only moved apparently on the tritium areas.

But there was some movement, so

they could have been exposed to the concentrations in and around SW-19. So there was a lot of discussion of that, which made it a more dynamic situation, which was part of the basis for the SEC.

And there was a lot of discussion about well, how do you scope that, and I think the Work Group at the time felt the easiest way was just to say R and SW because you know, radon sort of finds its own way so to speak, and there was some evidence that it was getting into both buildings.

And then, as I think we indicated, it was a lot of give and take and the feeling was that the trigger should be tritium bioassay because of this strong evidence that to get into R and SW you needed a tritium bioassay, and that seemed to be a cleaner way, just as opposed to using building designations.

I can't recall all the discussion, but I thought there was some unease about

using building designations at the time and it was a feeling that the tritium bioassay in the log was a much more cut and dry way of determining access.

And that certainly is the background. Now, the research I am hearing about is certainly taking what we did in that Site Profile interview a lot further, and I think it clarifies things that we didn't have a chance to clarify.

The only issue I have is that we did acknowledge influx into R building, and I think like this issue in general, once you get past the actual measurements in SW-19 and you know, sort of the concentrations in the tunnel, it gets a lot more subjective.

I mean you know, we don't really have good data points for radon measurements throughout R and SW. If we did we wouldn't have this discussion.

We don't really have, you know, a lot of specific information about you know,

did worker A go to worker you know, location B. So it becomes more subjective.

And I think the points that Brant is making are pretty persuasive, that if you have a negative pressure flowing into SW, and you have a sufficient barrier so that you know, you can assume that there isn't too much mixing of both people and air, and that you know, your rigor of tritium bioassay going from the cold -- cold side -- non-tritium -- the non-tritium side to the tritium side of R building, you have a rigor that precludes people from just dropping in a lot, then I think that's fairly persuasive.

But again, it's subjective and the only thing I would offer is that the Work Group might consider, given this turn, you know, sort of, because it did advocate R building, whether it wants anything more confirmatory about things like -- I didn't see a whole lot on -- I think that the discussion on negative pressure and you know fume hoods,

I think the issue on R building was that one interview, it was pretty clear that operation of a fume hood in a room seemed to really exacerbate the influx.

I don't have any idea how many fume hoods were in R building and didn't really have a chance to go look at the pressure -- not the pressure -- but the ventilation patterns.

But you know I think there might be some --

MEMBER ZIEMER: Are you talking about the -- from the non-tritium side?

MR. FITZGERALD: Yes. I mean if you have a --

MEMBER ZIEMER: Whether they were going there --

MR. FITZGERALD: Yes, if you have fume hoods drawing -- see the issue is, yes, the tunnel ended. I'm not going to argue that because I think we didn't have a chance to really look at the line drawings.

But if radon was entering R building, I don't think anybody will know where it went. Now, the negative pressure I think is a very strong qualifying factor that it probably didn't go too far.

I think if there weren't these kind of fume hoods on the non-tritium side, that would be a very strong argument that you wouldn't have another way of getting any radon from the foundation into the non-tritium area either.

And if you had -- and this part bothers me a little bit, because we had some misgivings about how rigorous the tritium bioassay entry requirements were, because I think we even heard from -- Mr. Sheehan, was that you that admitted that you came into -- there was somebody who came into SW and sort of acknowledged in one of our discussions that yes, they dropped in and they didn't have to do tritium bioassay.

So we had some misgivings about

whether there were people that might be exceptions that might have frequented but not necessarily got tritium bioassay.

If that requirement was fairly rigorous, then I don't think there's an issue. I think this presents a pretty good argument.

But I think there's -- you know, we just got the White Paper last month, and I think there's a few -- there's a few questions like that, just go ahead and put the R building to bed as far as that side of the R building would basically do it for me.

I don't know about the Work Group but you know if you are going to take the non-tritium part of the R building out I think you want to at least make sure about that and I think -- I didn't see too much on the ventilation but I did -- you just mentioned it. That's a pretty important theme in my mind.

If you had a reverse ventilation into SW from R, I would think that would have

a big mitigating effect on radon and the non-tritium portion, and particularly if there was a -- not an airtight barrier, not the molecular barrier, but you know, something that would keep the flow from mingling.

And if we could you know have something a little harder about the -- because one thing that we talked about a lot, and I think was raised in our discussions, was that you know one of the arguments for the SEC based on the SW-19 was, well you can really know who went in and out, I mean people kind of moved around, so you couldn't get a set group of workers that you knew were the only ones that would have been exposed to the radon in and around SW-19.

So that came up and I think to put that to bed you would want to know that you don't have that kind of movement, you don't have support workers who would not have had a tritium bioassay.

So I think there's a little bit

more of making sure we understand that clearly, that that was a requirement that went across the board. It would include support workers and they would not have gone in and acquired and accumulated you know -- those are the one set of workers who could get 250 days if they were in maintenance or something.

And I kind of doubt that they would not have been tritium-bioassayed if they frequented it from a support standpoint, but I think that that confirmation somehow I think would put that to rest.

So I guess my overall sense is this is pretty persuasive but there's some confirmatory things that would be useful, given the fact that we are really defining a hard line on the SEC and that there was discussion.

And when we were before discussing this SEC about the R building as a whole, that should be included, and we backed off because we were reassured that the tritium bioassay

requirement would be the trigger, and that would in fact encompass both R and SW.

Now it appears that's not the case so -- or not the case in this context anyway.

CHAIR BEACH: So I think I heard some action there possible --

MR. FITZGERALD: Well, I -- no, no, no, not a whole lot of action. I think it's just things that are being said, I think if we could get some confirmation, I think that would be sufficient.

DR. ULSH: Well let me be clear about my basis for making those statements. It's largely anecdotal. I talked to a former Mound worker who worked in this building for a number of years.

If you want documentation of the tritium bioassay requirements, we would have to go look for that and I'm not saying we can't. We can. We can go look for that.

In terms of ventilation, again, that is talking about the same worker, it's

anecdotal. If you want information about the ventilation patterns in that building we would have to go look for that as well.

So I mean if that's the actions you are asking then --

MR. FITZGERALD: Well I think, but I think those are very important, I guess, questions, but are they -- it seems like there must be something documented.

I mean it can't -- that kind of information sounds like to me engineering information that you would have at any plant. I mean am I wrong on that? You would have some evidence of what kind of patterns that you would have.

DR. ULSH: I'm not sure. I'd have to go look.

MR. FITZGERALD: Okay.

DR. ULSH: It's not something that I have looked for in the past.

MEMBER ZIEMER: Do we know whether there were fume hoods in the other side?

(Simultaneous speaking.)

DR. ULSH: -- there was at least one in the non-tritium part of the R building.

MR. FITZGERALD: Non-tritium.

DR. NETON: They were working with plutonium and other actinides in that building so I am very sure they had hoods.

MR. FITZGERALD: And to be clear, I mean, the thing that we found in the Site Profile Paul was anecdotal as well, I mean in terms of the --

MEMBER ZIEMER: Well, but I'm thinking in terms of engineering drawings. It seems to me that I mean, do we have any engineering drawings of that building, operational drawings that would tell us where -- if you knew where the fume hoods were, you could easily determine where the air supply -- I mean it wouldn't make sense that they would be drawing their air from this other part of the building into there, otherwise that reverses your flow.

So I mean, sort of --

DR. ULSH: I am sure that engineering drawings must have existed at one time --

MEMBER ZIEMER: But it's not something that you have?

DR. ULSH: I don't know if we have it.

DR. NETON: We may or may not. We haven't really looked at that level.

MEMBER CLAWSON: You've got engineering drawings for the tunnel, correct?

DR. ULSH: I've got the blueprint, the line drawings for the tunnel and they're in the report and in the SRDB.

MEMBER SCHOFIELD: How about looking into possibly state permitting or even -- I am sure they were on some type of program for replacement of the HEPA filters and stuff in the building, which would probably document what they went to, where, and that would give you an idea what kind of fans, what kind of

ventilation they would have.

DR. ULSH: My initial thought, Phil, is that a state or federal regulatory agency would be concerned about what you are blowing out the stack.

Where it goes before it gets to the stack is probably not their big concern. But I don't know, we -- again it's not something that we have investigated.

MEMBER SCHOFIELD: What I'm thinking is did you use your documentation for that, like, okay, we have these HEPA filters here, they go to this type of -- this ventilation system and then that goes into a file.

MEMBER ZIEMER: Well, if this -- if this stack is pulling from the non-tritium side, which is I think what you indicated -- do we know that for sure?

DR. ULSH: Yes, this stack serviced both SW and R.

MEMBER ZIEMER: So if there were

fume hoods over there, it's pulling on those?

CHAIR BEACH: Yes, if you look here you can see that the stack, well actually -- this is a better map. The stack goes all the way through.

DR. ULSH: Wait. Hold on.

CHAIR BEACH: Is that correct?

DR. ULSH: The stack is located here. Here's the tunnel right here. The tunnel --

CHAIR BEACH: Okay, so what is this right there?

DR. ULSH: I don't know. I would have to look.

CHAIR BEACH: That looks like another source of ventilation to me or a stack, because it goes through --

DR. ULSH: It's too tiny to --

CHAIR BEACH: But I -- that -- I would want to know more about that. And then it changes. And just for those of you on the phone, we are must looking at the drawings on

page 11 and 12 of NIOSH's report.

MEMBER ZIEMER: It's the October report.

DR. ULSH: I'll pull it up. Okay. Well, this might be relevant. The title of this drawing is SW building. I put partial, I put the word partial.

It's heating and ventilation. So it might be the kind of thing that you are looking for. It's a heating and ventilation drawing.

And yes, Josie, that telescoped line across the drawing there that you were talking about, it does give the dimensions and it does show that it -- where the -- different ventilation tunnels run.

Now again, I have only shown -- again I'll draw -- if you consider this entire line drawing, if it -- it's one of those building blueprints.

I snipped out the relevant portion. Well, I guess it's this part here.

There's more and that is in the original drawing that is in the SRDB. So if you want to see that kind of detail that's where to look.

CHAIR BEACH: Well, I think to separate the two buildings we are going to have to see that level of detail.

DR. ULSH: Okay, I think this drawing, this particular drawing is only of the SW building.

CHAIR BEACH: Is it only SW?

DR. ULSH: Yes, but --

CHAIR BEACH: Okay.

DR. ULSH: But I'm confident that there's a corresponding drawing for the R building, which I could go get.

CHAIR BEACH: And kind of the way I see it, and correct me if I'm wrong, we are kind of struggling with two separate issues here. We are struggling with the initial Class Definition, and the R and SW, and then the second part of this, the 83.14 that you are

proposing, actually covers all workers, so it's really not part of this.

DR. NETON: It wouldn't be if the proposal that we put forth is accepted by everybody.

MR. FITZGERALD: I see -- Josie, I see a dilemma though, because the presumption that the you know -- the presumption the Work Group was working on was that the tritium bioassay entry requirements would in fact encompass both buildings. That was the reason they went forward that way.

And it was a claimant that came forward that proved that presumption incorrect. So now we are going back and essentially doing further research to -- and I think the research is good. Don't get me wrong. We are actually trying to back off the scope of the SEC based on the fact that we now know that that presumption has proved erroneous.

And now we are trying to figure

out, more subjectively I might add, you know, how far to back it off. And I think again the parameters that are being discussed are pretty good ones.

But I think, given the circumstances, that in fact the claimant has gone forward has shown that the SEC presumption on tritium entry as being a trigger was not adequate.

I think there's a little bit more homework or just verification that we are clear that ventilation or the entry source in fact are adequate.

And I am a little concerned about anecdotal. I think anecdotal sounds, given the circumstances, maybe a little weak, that maybe we need to do more -- nothing wrong, I don't think we need to do a lot more -- but we just need to do a little bit more to make sure this is validated.

DR. NETON: I'd just like to -- I think it's a little different than maybe what

you portrayed the decision process was. My recollection was it was NIOSH's position that we did not feel that radon was -- should be, probably cover anywhere other than SW building.

SC&A's position was well, we don't know that it didn't go into the R building and until we know that, you know, we are not going to say okay.

MR. FITZGERALD: Well, we did know it went into R but --

DR. NETON: Well we don't know it went into R. See, that's the point. The question was, where did the tunnel stop, and Brant has demonstrated --

MR. FITZGERALD: No, no.

DR. NETON: -- conclusively that the tunnel stopped --

MR. FITZGERALD: But please, this is important. I think we did have the interview with the rad tech who actually monitored --

DR. NETON: Right.

MR. FITZGERALD: -- a room in R building where it was coming in, and I think Brant was able to validate that and even go a little bit further.

Now, that's where we left it because that was kind of the Site Profile inquiry, which says you know we don't know what the implications are for the building as a whole, but we can demonstrate that it wasn't just SW.

That's kind of what we told the Work Group and I think in the discussions it was clear that you know, okay, you know, the easiest thing to do is just say, since R and SW are joined, it's just both buildings.

DR. NETON: I agree. But in tracking that to ground, I think it's demonstrated that the radon was on the tritium-monitored side of the R building. I hope that's clear.

MR. FITZGERALD: Well, I think, I

think qualitatively you have made a persuasive argument. I'm just saying that at this stage of the discussion, since we just are starting this discussion -- this is the first time we have actually had the information that Brant has brought forward in this White Paper -- I would say the only lingering question I have, is I think the ventilation pattern is important. I think the note that Brant made earlier about the negative pressure I think would be a key, key issue in my mind, that okay, yes, I think you got it.

But I would like to see certainly a little more than anecdotal reference from a worker that that was the case. And that's all I'm saying.

And I think that's got to be available somewhere, that you in fact have a ventilation pattern, a negative pressure, where you can be a little bit more conclusive that the -- you know, any radon would be moving in the other direction.

I'm just a little surprised that all we have is the anecdotal reference from a worker. It must exist in something on the R and SW --

DR. ULSH: I'm not saying it doesn't. What I'm saying is that that's not one of the factors that we have gone into depth on in the research that we have done so far.

It may very well be sitting in our SRDB or it may be that we have to go look for it.

MR. FITZGERALD: Yes, yes, and that's what I'm saying. Just to make sure it's clear I'm not saying that I find your overall argument wrong. I'm just saying that I think, given the circumstances of how this came about, it would be very important to at least nail that down and there's a couple of other things I'd be interested about fume hoods.

I think this -- that actually to

me is maybe among the most important ones, that plus a little better tack on tritium entry, just to make sure that since we have had some hiccups on that in the past, that you know, we are pretty clear, if you were a maintenance person, you wouldn't be crossing back and forth into the tritium side of R if you didn't have tritium bioassay, that kind of thing.

DR. ULSH: So, Josie there's a couple of proposed actions on the table for further research, and I just want to be clear that we bring you what you want.

In terms of heating or in terms of ventilation, the ventilation issue, we already have in the SRDB and a portion of it in this report, this heating and ventilation drawing.

We don't have that drawing in our possession for the R building, but I am pretty confident I can get that. Once I do that and put it in the SRDB and let you guys know that it's there, is that the information that you

are looking for on the ventilation question?

CHAIR BEACH: That, yes, that is part of it, for ventilation.

DR. ULSH: For ventilation.

MEMBER ZIEMER: Let me ask a question though. Will we be able to tell do you think from those drawings actually what the movement, what's hooking up to what, the words -- for example, will we know that the R building ventilation goes through this stack -- that's the only stack in the building -- will we know that from the drawings? How interpretable are they?

DR. ULSH: I don't know Paul. I'll leave that to your discretion. There's a sample of it here in the report and --

MEMBER ZIEMER: Yes, we'll have to look at it and see whether we can make something out of it.

MEMBER CLAWSON: Josie, one other part of this -- because I want you to take a look at this. When you put a building at

negative pressure, you have to have a supply. That's how you maintain it at your negative pressure, so with the dampers.

And if you follow this on with page 12 over the top where it says the concrete plenum right here, and you see the ducts going across that, that's your supply air coming into the facilities.

And it flows into your main ducts that run down through the center of this. Through the use of the dampers and stuff is where you maintain your rooms, and also the building at it.

The thing that's --

CHAIR BEACH: Brad, it's not clear if that -- that looks like it hooks into the tunnel and it's not clear that it hooks into the other -- that one goes across the middle.

MEMBER CLAWSON: That's -- that's the point I'm trying to get at --

CHAIR BEACH: Okay, sorry. Go ahead.

MEMBER CLAWSON: Because we need -- we need to be able to see how the supply -- because to me right here, what bothers me is we've got the tunnel that goes right up and right across, and goes right into the bottom of this air plenum, and it's got that concrete plenum right here. That's -- that is your supply air.

CHAIR BEACH: Okay, so go ahead --

MEMBER CLAWSON: So we need a -- we need to determine from the prints. If you have got it, we can determine the flow chart from that. But it makes me worried about this being the tunnel underneath there, and right over at the other end of it, this is the supply air coming in.

Because if you look at your main -- main tunnel right there, you've got 3,450 CFM compared to the 6,500. On both sides of the building, flowing inward, you have your supply air coming into your exhaust going out.

You control -- those rooms are

controlled by dampers to maintain the negative pressure. I just want to be able to make sure where we are pulling that supply air from.

DR. ULSH: So, are you happy with this drawing or do you want something --

MEMBER CLAWSON: Well, this drawing, what bothers me is the concrete plenum that you are drawing your air from is the same one right above the tunnel.

DR. NETON: Well, I think we just need to go get the drawing.

CHAIR BEACH: Well, I think we need -- this is SW. We need --

MEMBER CLAWSON: We need, we need help. We need help. R is going to tie into it. It's --

DR. ULSH: My action item out of this in terms of the ventilation question is to go get the corresponding drawing for the R building.

Now the other proposed action that's on the table is to --

DR. NETON: Well, I think it does slightly go beyond just get the drawing but try to determine, at least internally within NIOSH, what we believe to be the case, where did the air -- was under negative pressure --

MEMBER ZIEMER: Basically you want to be able to demonstrate that R isn't drawing air from SW.

DR. NETON: Exactly. I think if we get the right drawing, we should be able to do that.

CHAIR BEACH: So we're also looking at the fume hoods in R, if there are any and --

DR. ULSH: There are.

CHAIR BEACH: What their source is.

MEMBER ZIEMER: Well, there's still got to be plenums to supply the rooms where those fume hoods are.

MR. FITZGERALD: It's the same issue. Are they drawing them out you know,

that kind of thing.

MEMBER ZIEMER: Yes.

MR. FITZGERALD: Yes.

DR. ULSH: Now the other --

MEMBER ZIEMER: And you also have this, and many of these things, where you have a negative system but if part of the system is turned off, for example if the SW side is turned off, does the R side pull air back?

I mean I've seen this in hoods -- you have two hoods in the room, you turn one off and the other one is working and you get -- you get air exchange. You need a little bit of definition out of that.

Is it possible for the air to move in the other direction if some subset of those things is turned off? Some of them work great if everything is running.

Of course nowadays, you get alarms if the rooms go -- if you lose the negative pressure. I don't know if they had that in those days.

DR. ULSH: Yes, that's covered in the -- one of the followup interviews that we conducted, the question was asked, what happens when you had a power outage.

Because this stack right here --

MEMBER ZIEMER: Well, even without a power outage, sometimes you lose negative pressure for other reasons, but yes.

DR. ULSH: The stack right here was an active stack, not a passive stack. It was hand-driven.

MEMBER ZIEMER: Yes, okay.

DR. ULSH: So when power was lost, that fan would shut off. The alarms would start to go off across the buildings and people evacuated. That's what happened.

MEMBER CLAWSON: SW was built first, right, and then R was added on? I thought I remembered, because getting into this, the first SW is built and like all these sites, you know, they add on buildings right and left, the way it goes in.

DR. ULSH: I don't know Brad. I don't know which one was built first.

CHAIR BEACH: Okay, so -- oh sorry.

MEMBER CLAWSON: I was just going to say, 10 to 1 with -- because this is just a basic flow diagram for SW. You probably have a fume hood diagram somewhere in their, in their paperwork.

This can show how all that ties in, also how R ties into the facility too. It should be relatively easy.

DR. ULSH: If it exists over -- if I can find it, I'll grab it.

CHAIR BEACH: Okay, so let's be clear. Can you just run through your action items again, just to make sure we have covered them all?

DR. ULSH: I'm going to look for the drawing, the corresponding drawing for the R building. I'll do that. If there are drawings in this collection that deal with

fume hoods, I'm going to grab those too.

Now Jim talked about some further deliberations --

DR. NETON: To the extent we can, yes, based on the information we find, can we document the directionality of the flow of the air between the R and SW building?

That's the main goal here. I don't want to just throw data out to the Working group and say okay, here it is , what do you think?

I mean we should do some sort of interpretation of we find, that's all I'm saying.

CHAIR BEACH: And then tritium entry requirements, what --

DR. ULSH: Yes, that was the second proposed action and I guess I am asking you what kind of documentation you want to see.

MR. FITZGERALD: Well, I think that issue is just to -- you know we have had

in and outs on this issue. I think it would be helpful to see if there's anything that could clarify, you know, how rigorous I guess is the best word in terms of people going back and forth from non-tritium to tritium, whether or not one would expect them to receive tritium bioassay, not just for the dropping the mail off type thing, but you know, if they in fact had regular duties like maybe maintenance or something like that.

So just to clarify that because I am still a little uncertain about that situation, more so now that we learn that even within R building you had these two camps that were coexisting.

And I think that would help answer the question I think Brad raised earlier, which is would you expect to have much mingling and therefore some problems with that? I think that would help the Work Group clarify, no, it was fairly rigorous, there might have been some intermittent, but

certainly not 250 days type of thing. That's all I'm saying.

DR. ULSH: Well, we -- I understand the intent.

MR. FITZGERALD: But as far as the actual mechanics, I would look for any progress reports or something that would speak to Joe Schmo you know, was exposed to tritium but was not monitored or something that would show evidence that they were actually managing that so that you didn't have -- you wouldn't expect to -- because they had procedures that said that but I think we are finding they are not necessarily airtight in all cases.

In this case you have two populations in the same exact building separated by perhaps a door, where on one side you had a tritium bioassay presumably, on the other side you did not.

I can't imagine back in the '60s and '70s that was necessarily as rigorous as we would think it might be, you know.

MEMBER ZIEMER: But in the actual case though that sort of raised this question it was sort of the reverse. It's not a person who claims they were exposed to tritium --

MR. FITZGERALD: Right, right.

MEMBER ZIEMER: They weren't given that bioassay. They were not given bioassay and were in the building that was presumably what we were designating initially.

MR. FITZGERALD: Yes, and we were concerned -- in this original assessment we were concerned about actually the reverse issue but --

MEMBER ZIEMER: But what you are talking about seems to me it would be a little different. Are there people who were exposed to tritium that didn't have a tritium bioassay? That's sort of separate from the case that raised this.

MR. FITZGERALD: Oh no, no, I am not raising that. I see it as the first, meaning that with the -- in this case it

wasn't a tritium worker, worked on a clean site, and the presumption is that he did not go over to the other side without -- because he didn't get a tritium bioassay.

MEMBER ZIEMER: Right.

MR. FITZGERALD: But I'm just saying are we -- how sure we are that -- how sure of that are we given the fact that this has come up before about is that a black and white line as far as entry into the tritium areas of R and SW or not?

MEMBER ZIEMER: Now the case, Brad, that you raised, the guy, was he claiming he got into the -- inside the building or was he --

MEMBER CLAWSON: No, he had access --

MEMBER ZIEMER: Or he could get inside from --

MEMBER CLAWSON: Oh, he had access --

MEMBER ZIEMER: this outer -- he

was working outside on the main line?

MEMBER CLAWSON: Well, yes the main power feed coming in --

MEMBER ZIEMER: Yes.

MEMBER CLAWSON: They had to do electrical upgrade on it as a lot of them did, especially when they added on buildings, you could actually gain access into the building, into the electrical panel room out through an outside door.

There was a door that went into the --

MEMBER ZIEMER: For the electrical stuff.

MEMBER CLAWSON: Yes, but part of the thing was --

MEMBER ZIEMER: It wasn't part of the regular entry?

MEMBER CLAWSON: No, this --

MEMBER ZIEMER: I got you.

MEMBER CLAWSON: Part of the thing was, is they were pulling cable from inside

the facility to do the electrical upgrade. Well like anything else, especially with the negative plant, you pull a lot of stuff through you know, it's what they call influxed air that runs through the electrical columns, especially where it's off conduit.

CHAIR BEACH: Okay, any other actions there for radon?

MR. KATZ: Is that one clear, because it's still not clear to me what exactly how --

DR. ULSH: I mean we've got worker interviews that tell us what the policies were. I can probably find you written documentation that will at least cover -- that will at least be relevant to this.

I don't know whether it will answer every question. It's not clear to me, beyond those two data sources, exactly what we are looking for, but --

MR. FITZGERALD: Well, I think it's the rigor of implementation. I think

there's policy that says you should get tritium bioassay if you are in a tritium area. I think no one argues with that.

But you know, you called, Brant -- we did interview -- I can't remember who it was. But somebody -- we point blank asked them, we said you know, when you went to SW, did you have to leave a tritium bioassay, and this individual as I recall -- we can look up the notes -- responded that no because I didn't work there, but I went to, if I remember, I had a meeting or visit or something, and I thought that oh, that's interesting.

So you know, if you're not a worker in that building, you can still get in without a tritium bioassay. So that kind of raised some questions in my mind about how -- you know these days you could not even walk in the door without evidence of being bioassayed.

Back then it sounded like it was a little looser. You could go in but as long as

you weren't a steady worker, you didn't need it.

DR. ULSH: My recollection of an interview -- I'm not sure that we are talking about the same interview.

MR. FITZGERALD: Okay.

DR. ULSH: But it was a particular worker, I will tell you his name when we are on break, said that -- the question was presented, if you worked in this building, would you be on tritium bioassay and the answer was yes.

But what about if you just went in intermittently, what if you went in to deliver a letter, or something like that, and the workers --

CHAIR BEACH: You had a meeting.

DR. ULSH: Right, had a meeting, right. That was another scenario.

CHAIR BEACH: Yes.

DR. ULSH: And the worker said, well, you know, it's possible someone could

have gone in for a meeting or to deliver a letter and not given tritium bioassay. They were supposed to but I can't swear to you that that always happened.

That's the interview and the answer that I recall. Again, I'm not sure if we are talking about the same one.

MR. FITZGERALD: I think it was. I think though that's kind of where we are at. I mean I think it's difficult to gauge implementation as opposed to policy because policy is easily written down but how you actually carry out the policy is always a question in terms of management of the program.

But in this case I think that it would be helpful to know if there's anything that would give the Work Group confidence that you know, anyone who went into those areas would have received a tritium bioassay if they were there you know, any appreciable amount of time.

MEMBER ZIEMER: Is there anything more we could get that we don't have? We have this one interview. Are we going to interview a bunch more people and see how widespread this is?

MR. FITZGERALD: I don't know. I think it's partly can you in fact do anything more than just say that you know, the expectation would be that you wouldn't have that.

Now, this one individual, the claimant, who was in the no-tritium side of R, who worked on the non-tritium side of R, I mean, I don't know if anyone interviewed him --

MEMBER ZIEMER: Well he is not claiming to have gotten tritium.

MR. FITZGERALD: No, I would ask him you know, did you go into the tritium side of R?

DR. NETON: I was going to say, it seems to me the issue is really the robustness

of the R -- the two sides of the R, like before, because there's already a Class based on this.

So presumably we would all feel comfortable with the fact that the tritium bioassay program was robust and you could do it, and now the only real difference here is that you have a building that's --

MR. FITZGERALD: Implementation.

DR. NETON: Close to it.

MR. FITZGERALD: Yes, oh close to it, it's --

DR. NETON: What I'm saying though is that if it's going to focus anything, it's not so much of was that requirement in place because we have already had a Class based on that requirement. It's could people who were in the R building who had much more convenient access to that other side --

MR. FITZGERALD: I mean I would even -- we could interview this one individual and say listen, you know, you clearly didn't

have it. Now, you and your colleagues, did you, you know, cross over on a regular basis because you know, it was just a door.

Did you have to in fact -- did you know you couldn't do that because you were on tritium -- I mean I just would want to have a little bit more than we have now, particularly since this came up the way it came up.

DR. ULSH: So we want more work interviews? Is that --

CHAIR BEACH: Does SC&A want to interview this particular worker that NIOSH -

MR. FITZGERALD: It's up to the Work Group. Certainly the Work Group can make that call.

CHAIR BEACH: I think it's a good idea.

MR. FITZGERALD: Is there any reason we couldn't?

DR. NETON: I don't know. I was just thinking about that. I mean, this person is --

MEMBER ZIEMER: Is this a closed case already?

DR. ULSH: Don't know.

DR. NETON: I don't know.

DR. ULSH: The information that was submitted to us wasn't submitted to us by the claimant. It was submitted to us by --

DR. NETON: The Department of Labor.

DR. ULSH: No, no, no. The information that suggested that this person worked in the R building but did not have tritium bioassay was given to us by a third person.

DR. NETON: I don't think so. I think --

DR. ULSH: Well, let's talk about it on break.

DR. NETON: Okay. Maybe I'm --

MR. FITZGERALD: I think it's an important qualifier. But if we could talk to he and/or his colleagues, his coworkers in

that side, I think --

MEMBER ZIEMER: To confirm what the barriers --

MR. FITZGERALD: Just to confirm, say okay, you guys were not on tritium bioassay, can we confirm that you did not spend any appreciable amount of time in the tritium area.

My concern is that they probably consider themselves Pu workers, not tritium workers, and -- but did that mean there wasn't, you know, that part that I hear, I would like to hear them tell us no, we didn't go over there because we knew we shouldn't go over there without tritium bioassay, or if it's the converse, then it sort of throws that out.

MR. KATZ: My concern is if you do this, and I think it's fine to do this, talk to this initial person or whatever, but then, depending on what you learn, you may need to talk to a lot more people, because it's not

going to get you past -- it's not going to resolve this issue depending on -- I mean, I'm not sure how you get a feeling of resolution from talking to one individual alone.

CHAIR BEACH: Well I think it's a combination of that person plus looking at the drawings, seeing how the buildings were connected --

MR. KATZ: No, but the drawings don't get to this issue --

CHAIR BEACH: No.

MR. KATZ: which is --

CHAIR BEACH: But it's a combination of --

(Simultaneous speaking.)

MR. FITZGERALD: I preface my remarks saying we are in a subjective part of this. There is no way to do it in black and white. We are just saying you know, weight of evidence, persuasiveness, and I think this would add to the persuasiveness of what we have heard today, and be a little more

confirmatory given the circumstances.

MR. KATZ: Right and I'm just saying, depending on what he says, so what if he says well you know, I did it, you know, once a month I went over there without a whatever, so then what do you do? Then you need to figure out, I mean, if you bring that back to the Work Group, I don't know what the Work Group makes of that.

MEMBER ZIEMER: I don't think we know until we hear what the answer is to --

(Simultaneous speaking.)

MR. FITZGERALD: We do the best we can. We do as best we can. It may be equivocal and in which case, you know, no worse off but we are not going to --

MR. KATZ: No, so the only thing I was just thinking, is there a decision logic we can have here at the Work Group now as to if you find this, then you go interview more people or whatever, so that we don't have you know, four months between steps here?

MEMBER ZIEMER: It may be that this worker could tell you not only his personal experience but what about the others in your group or something.

MR. FITZGERALD: That's what we are hoping.

MEMBER ZIEMER: What was the practice? Because if you have one person either way you can say well that's him, but maybe there were others who were different.

MEMBER CLAWSON: I think also, to the information that we have, the question will be able to be more addressed towards this R issue, not just in general, as it was before.

I think we are getting to the very end of that and the question can be pretty quick.

MR. KATZ: So if he says for example I don't really know, you know, I didn't have more exposure, because I don't really know, do you want at that point for

SC&A to interview some more workers or --

CHAIR BEACH: No, I think -

MR. KATZ: That's what I'm just saying.

CHAIR BEACH: At some point we need to make a decision and move forward.

MR. KATZ: I'm just trying to say do you do this thing step-wise.

CHAIR BEACH: Right.

MR. KATZ: Since we have this case maybe we can take advantage of it and learn something. If not, we leave it.

MR. KATZ: Okay.

CHAIR BEACH: I agree with that. And before we move on, Deb, is there any question you might have on this issue?

MS. JARISON: Thank you. The only thing that comes to mind is, and I don't remember the time period that I saw this, but I think in the documents I've looked it, I've seen references -

CHAIR BEACH: We missed that Deb,

could you say that again? We are going to turn up the mic a little bit.

MS. JARISON: In some of the documents I have read and I don't remember the date, but I did see references to air reversal in R, but that's the only thing I could think of that speaks to the issue.

CHAIR BEACH: Yes, and that's something we addressed a little bit earlier. If you think about where those references were, could you send me an email on that, because that would be important for us to take a look at.

MS. JARISON: I'll search the database a little later and see what I can come up with.

CHAIR BEACH: Okay. Thanks Deb.

MS. JARISON: Thank you.

MEMBER SCHOFIELD: Brant, I've got a quick question for you. I'll assume the section at Mound who did all those urinalysis, fecal samples, all that stuff, had a logbook

they maintained. Have those been digitized, that you guys could search them by - however they did it -- maybe the employee number or social security or whatever?

DR. ULSH: We -- okay. We located the collection of tritium urinalysis logbooks for the time period '59 through '80 with the exception of those gaps we discussed earlier.

Those logbooks have not been digitized in their entirety. I mean, we haven't coded them into spreadsheets in their entirety.

What we did do is go through and pull out -- ORAU did this -- pulled out the identifying information, the name, the HP ID and when they gave the tritium urinalysis result.

I'm not sure if we put the actual result in there. The point was so that we could assemble a list of name for the SEC Class. Does that answer your question?

MEMBER SCHOFIELD: Well, kind of,

what I'm kind of thinking of, there's a possibility that maybe some people are listed as plutonium workers rather than tritium workers, but yet they were actually on the combination bioassay program. And may not have been in the tritium database but might be in say the plutonium workers' database.

DR. ULSH: Well, in the logbooks the workers are not identified -- they are not categorized as plutonium workers or tritium workers, at least not in the logbooks I'm talking about.

MEMBER SCHOFIELD: Okay.

DR. NETON: These are just bioassay logbook records, they are not analytical laboratory records. They didn't go into any kind of detail about the job location.

MEMBER SCHOFIELD: Okay, so I just wonder if they'd broke them down or something.

DR. NETON: Not in this particular logbook.

MEMBER SCHOFIELD: Okay.

CHAIR BEACH: So any more questions or comments on radon? Has everybody got their actions? And be thinking about how soon these actions can be completed too, because we are going to want to schedule another meeting for very soon.

MR. KATZ: So, and on that last action, so Brant, NIOSH is doing the look also at the worker interview for the worker interview we have, and follow up with that worker, or is SC&A following up --

DR. NETON: We don't have a worker interview. We have a case.

MR. KATZ: The case.

DR. NETON: And I don't know if that person is even available to interview.

MR. KATZ: But SC&A would be doing that interview, or --

CHAIR BEACH: I think a combination of --

MR. KATZ: Both together.

(Simultaneous speaking.)

CHAIR BEACH: If it's possible, then NIOSH will have to provide that information.

DR. NETON: We need to find out.

CHAIR BEACH: Yes.

DR. ULSH: Yes, I don't -- I don't know the vital status of this person. I don't know if they are still alive and available, I don't know if they are willing to talk to us, so we are going to have to find out.

MR. KATZ: Right, okay.

CHAIR BEACH: But that --

MR. KATZ: That makes it clear.

MR. FITZGERALD: Well, just to clarify though, I think what Paul was saying earlier, it's not just that person. We can identify coworkers in the R building -

MEMBER ZIEMER: Well, or if that person knew what the practice was as a group, because people often know that, yes, we all went here and did that --

MR. FITZGERALD: We had lunch over in the SW every day or something, you know.

MR. KATZ: So, if that case, that individual case, that worker is not available for one reason or another, you might look for someone else who worked in --

MEMBER ZIEMER: Worked with that person.

MR. KATZ: the R building and was similarly situated. Is that what we are saying?

DR. ULSH: We could, or how about if I just let the Working Group know that result.

MR. KATZ: Yes, that's the first step. Right. And I think we can, we can go forward by email on that, if we know what we learn.

CHAIR BEACH: Okay. So we are finished with radon. Yes, let's take a 10-minute break.

(Whereupon the above-entitled

matter went off the record at 10:31 a.m. and resumed at 10:46 a.m.)

MR. KATZ: Okay, we're back online, a short break. This is the Mound Work Group.

CHAIR BEACH: Okay, and so at this time we are going to move into neutron and NTA film track fading and adjustment factors, and I believe we are going to go ahead and have SC&A kick this portion off.

MR. FITZGERALD: Yes, Ron Buchanan, are you on the line?

DR. BUCHANAN: Yes I am.

MR. FITZGERALD: Would you summarize, and we did receive -- we exchanged a series of papers over last year and we did receive the most recent one from NIOSH I think it was in the spring.

CHAIR BEACH: March 2011.

MR. FITZGERALD: Right, 2011. And we just provided our response late summer I think it was, August or whatever, September.

So if you can recap what we, you know, this history a little bit, and how we responded to the very last NIOSH paper.

CHAIR BEACH: So just to be clear, I believe the report Joe just referred to is the October 4th, 2011.

MR. FITZGERALD: Right.

DR. BUCHANAN: Okay, yes, that's correct, October 4th was our last memo, and this summarized all of the previous discussions and action items down into three issues on the neutron part.

One was the debating over the correct MCNP correction factor to use, four or eight inch, a poly or water. We also had action two which was concerned with the fading, the track fading after a period of time, and item three was the data for 1951 to 1960.

And so what -- we went through all the exchanges here and I briefly summarized them in that memo of October 4th. But today I

will breeze through all those -- I will just summarize.

The first action item one, was concerned with the fact that we felt -- the SC&A felt that the eight inches of water was more appropriately used when modeling the neutron.

This was due to the moderation of the high energy neutrons to thermal and how much the NTA film had missed.

And so SC&A's last statement on that is that they would -- they felt that the four and eight were close and four was more representative but they would accept the recommendation and use eight and use the tables two and three in SC&A's report.

And so we agree with that decision and have no further issues on the fitness of material to use in that modeling. That was action item number one.

CHAIR BEACH: Any discussion on that, comments from -- Work Group Members have

questions?

MEMBER ZIEMER: It sort of ends up to be a moot point, you are saying in practice, in terms of the actual values between the four and the eight, right?

MR. FITZGERALD: Yes, but there was considerable concern early on --

MEMBER ZIEMER: Yes.

MR. FITZGERALD: That that would make a difference and as it turned out --

MEMBER ZIEMER: But it actually didn't so --

MR. FITZGERALD: It did not.

MEMBER ZIEMER: So is that pretty much true across the board then?

DR. ULSH: What do you mean across the board?

MEMBER ZIEMER: Well, are we going to have -- sort of intuitively you would think there would be a difference, but in every case where this is -- this is for calibration I guess mainly, right? Is it a calibration

issue?

DR. ULSH: No, it has to do with -- well like Ron said, it has to do with the MCNP model that we did.

MEMBER ZIEMER: Oh, yes, so if you model it with eight versus four?

DR. ULSH: Right. We proposed to use four inches. SC&A said no, we think you should use eight.

MEMBER ZIEMER: Right.

DR. ULSH: We said you know what, we still think four's better but it doesn't make any difference, well, not much of a significant difference. Going from four inches to eight, the results are almost exactly the same.

MEMBER ZIEMER: Okay.

DR. ULSH: So, in the interest of coming to closure, we'll just agree.

DR. BUCHANAN: Yes, and this had to do with the number of neutrons that were missed by the NTA film, and in a couple of

instances it had made a small amount of difference, but essentially you plateau out when you get to between four and eight inches.

So I think we have settled that if there's no other questions.

CHAIR BEACH: No.

DR. BUCHANAN: SC&A's main concern is that we need to look beyond four inches to see what happens out there, and when we did, we've seen that there wasn't a whole lot of difference.

So that brings us back to item number two, and this had to do with fading, as NTA film is worn and then is say, turned in once a month, and what about the first tracks that register at the beginning of the month, there is fading especially if there's humidity and these weren't originally sealed against humidity.

And so we -- what that comes down to is that we agree with NIOSH's recommendation of 33 percent in one-week and

56 percent in two- and four-week films.

What we didn't agree with was the nine percent fading factor, and so in TBD-6 for Mound, it does state the 33 percent and 56 percent. In the Evaluation Report there is recommended a -- the SEC Evaluation Report recommended a nine percent, nine percent fading factor.

And so we agree with this issue as long as the TBD values are applied, the 36 and 56 percent, and I understand that's what NIOSH intends to do.

DR. ULSH: Yes I think so.

CHAIR BEACH: And so does the nine percent, does that go away, or --

DR. BUCHANAN: Right, we -- nine percent would not be used.

CHAIR BEACH: Okay. All right, and so NIOSH is agreeing that they are going to use the 33 percent and the 56 percent. Any comments or questions?

MEMBER ZIEMER: I had a question.

It wasn't clear to me when whoever did Mound's dosimetry, did they apply those factors already or are you applying them on their results?

At what point are those corrections being applied? I would have thought they would have been applied originally by the people reading the dosimeter based on those time factors.

MR. KATZ: Before you answer that, can I just -- there's someone on the line who doesn't have their phone muted and there's feedback, and I don't know, it's -- we can live with it in here, but I don't know how bad it is for people trying to listen.

So someone on the line needs to mute their phone, *6 if you don't have a mute button. Thank you.

DR. ULSH: To answer your question Paul, I know Ron Buchanan is on the line because he just spoke, and I am hoping that Bob Morris is on the line. Bob, are you out

there?

DR. BUCHANAN: He was on.

DR. ULSH: Okay, so I think the answer Paul, I haven't looked at this because we were in agreement, but I think the answer is we are proposing to go back and apply the fading factor to the reported results.

And I think it was based on some subsequent studies that were done at Mound, so after the NTA film, you know, had been used, at some point a study was conducted by Mound to look at the fading issue, and we are proposing to apply those --

MEMBER ZIEMER: Right, and I understood that, and it seemed to me that if they knew what the fading was, they would have applied it to their final numbers.

DR. NETON: But not necessarily retrospectively. Is that the issue?

MEMBER ZIEMER: I don't know. That's what I'm sort of asking, has it already been applied, and -- well, even if it's

retrospective, is there some point at which you no longer apply it because it's already been applied?

In other words you are taking the number and recalculating it, or have they already done it? Do we know the answer to that? That's all I'm asking.

MR. MORRIS: This is Bob, Robert Morris, Ted.

MR. KATZ: Yes, go ahead.

MR. MORRIS: In some cases the record was ambiguous about when or if correction points were applied.

MEMBER ZIEMER: Okay, so if we don't know, we'll go ahead and apply it, is what you are saying. But are there cases where we do know?

MR. MORRIS: We do know that in some cases there were corrections applied and that in some cases they were the wrong correction factors from our assumptions, because we have gone back reconciled and said

well, that wasn't conservative enough.

So we backed out any correction factors that we had identified and then reapplied them in our work that went into the White Paper where our correction factors were defined.

So our dose reconstruction method will have taken out correction factors that we have identified and replaced them with the correction factors that we specified.

MEMBER ZIEMER: I got you. So even if they applied correction factors, you'll just start over with the original data and reapply.

MR. MORRIS: That's correct.

MEMBER ZIEMER: I got you. Okay, that will work for me.

DR. BUCHANAN: Yes, Paul, this is Ron Buchanan, SC&A. In Meyer -- most estimates -- their work was taken from Meyer and in a lot of -- several cases he would say at the end of something, oh, this is the

correction factor, but it never did say, and he might say it should be applied but it's never stated that the data was changed and so we have to assume, unless we see in the records that it was changed, that it wasn't changed.

MEMBER ZIEMER: Yes, understood. That's fine. That works for me.

MR. MORRIS: Yes I agree with exactly what Ron just said.

CHAIR BEACH: Great. Okay. I think we are ready to --

MEMBER ZIEMER: So both -- those two agree then and --

CHAIR BEACH: So that closes item two and then on to item three Ron please.

DR. BUCHANAN: Okay. On item three, in a certain period, 1951 through 1960, there was an individual, it was always individual neutron data, and so NIOSH proposed using a categorical data which we had some problems with in light that there was NTA film

available, and instead of trying to do an N/P method, just use the NTA film directly as it was, we had requested that NIOSH look at that and they said that they would go back and look at that and SC&A at this point does not see that this is an SEC issue.

We believe that either, you know, the categorical data, what NIOSH proposes or the method we propose of looking at the raw NTA data supplies enough information to provide dose reconstruction or coworker data for that period.

And so we do not believe at this point it is an SEC issue.

DR. ULSH: And to add to that, to bolster what Ron said, the argument that we are making is the time period that we are talking about using categorical data is 1951 to 1960, and we already have an SEC Class for that time period.

So, and that SEC Class includes all workers. It goes from 1951 to '59, so

there is one year additional. But the effect of saying that we can't reconstruct neutron doses, it wouldn't add anyone to the SEC Class, it wouldn't benefit any claimant. It would just throw out neutron dose because you are saying we can't do it.

CHAIR BEACH: Right.

DR. ULSH: I don't know if you really want to pursue that.

MR. KATZ: Although that's not really a basis for judging feasibility.

CHAIR BEACH: No.

MR. KATZ: Even though that's what you say is correct, it's really -- it's supposed to be just determined on its merits.

MEMBER CLAWSON: Correct. Any questions? So I am going to say that with that neutron -- the neutron issue 14 and -- oh -

MEMBER ZIEMER: So, one as the sort of action then is to accept that.

CHAIR BEACH: Well, because SC&A

is saying that either their calculations or NIOSH's, they are in agreement with that.

DR. BUCHANAN: Yes, it would be a TBD issue as opposed to an SEC issue.

MR. KATZ: But did I understand you? I thought what you were saying Ron is that either method, your view is either method is adequate, is that what you were saying?

DR. BUCHANAN: No, I'm just saying there's two methods available. SC&A recommends using the categorical data. SC&A recommends using the raw NTA data. But SC&A feels like the data is there and so it isn't an issue.

MR. KATZ: Okay, thank you.

CHAIR BEACH: And Brant, what are your plans? Are you going to use the raw data or -- or just catching you cold here.

DR. ULSH: No, actually you are not. I have thought about this. But there's been some back and forth between NIOSH and SC&A about the acceptability of the

categorical data for 1951 to '60.

I think it's accurate to say that we are not yet in agreement about that question. We are just at the point where we both agree that it is not an SEC issue.

CHAIR BEACH: Right.

DR. ULSH: We have got some reasons for favoring the categorical data but I don't know if you want to get into that now, since it's -- we are saying that it's really kind of a TBD issue.

CHAIR BEACH: What does the Work Group think?

MEMBER CLAWSON: If it's TBD -

MEMBER ZIEMER: If we agree that it's a TBD issue it takes it off the SEC plate and then we can discuss it as part of the TBD, which is what I think both sides are recommending.

CHAIR BEACH: Yes, I agree. Okay, so that closes issue 14 and 15. And well, I guess I shouldn't close it. Warren, are you

still on the line?

MR. SHEEHAN: Hello.

CHAIR BEACH: Hi. Did you have any questions or comments at this time?

MR. SHEEHAN: No. Oh there was one comment about Brad I think suggested that the SW building was built before the R building. That's not right.

The R building is part of the original construction. The SW building was added on.

CHAIR BEACH: I think his question was when was it built, so thanks for clarifying.

MR. SHEEHAN: Okay. Well it was built in about 1950.

MEMBER CLAWSON: Yes, we were just trying to figure out how the airflow is going. We are going to pull up the prints on that. I appreciate that, though.

MR. SHEEHAN: Okay. Regarding the film fading correction, I believe that the

nine percent correct was never made on the films at that time. I don't know if people have ever substantiated that it was. I don't think it was.

And then later on, I think in the '60s, when we got into the plutonium-238 oxide problem and clearly started that calibration system of '68, I'm not sure that they went back from '68 to say '60 to correct the fading problem. I don't know who did.

CHAIR BEACH: Okay. Thank you. All right.

MEMBER SCHOFIELD: I have a quick question. Do we know what shielding they actually had on the glove boxes? Was it like four inches of polyethylene or four inches of water?

DR. ULSH: We do. Bob Morris modeled it. So Bob, what was it?

MR. SHEEHAN: Is that a question for me? I don't know who the question is directed to.

DR. ULSH: Sorry, I understand it's a general question but I am kind of directing it to Bob Morris.

MR. SHEEHAN: All right. Thank you.

DR. ULSH: Hello Bob, are you out there?

MR. MORRIS: This is Robert Morris. It was water-based shielding.

MEMBER SCHOFIELD: Okay.

CHAIR BEACH: Okay.

DR. MAURO: This is John Mauro. Can you folks hear me?

CHAIR BEACH: Yes, we sure can John.

DR. MAURO: I thought I would just add a little -- I remember when we ran the analyses on the thickness of the shielding and the effects it had on the distribution of the energy, and one of the questions I asked of Bob Anigstein who made the runs, does the model of the glove box itself -- and such as

the question that you just raised, the thickness of the window, or the type of window and the material.

And he looked at a variety of glove boxes and he said really the glove box, it doesn't matter. What matters, you know, what, when we looked at that, that was not a factor and he was looking at how the energy distribution of neutrons changed when you increased from I guess anywhere from two inches up to 12 inches of water shielding.

So I guess to answer your question Phil, we found that the make and model of the glove box really didn't have much effect on the results.

MR. MORRIS: This is Robert Morris. One more thing, just I recall, in some cases there was Benelex shielding requiring, and so when we did this analysis initially, we interchanged Benelex for water and demonstrated there was not much difference in the shielding effect.

So I think you can almost think of them as interchangeable kinds of materials. It's really the question of how much hydrogen is in the medium.

DR. MAURO: We agree with that.

CHAIR BEACH: Okay. Thank you. So if we are ready, let's go ahead and move into the D&D issue which is item number 10. And let's see. Just a little bit of history. The Work Group did a little work on D&D and then Joe sent out a memo back in April I believe, was it April?

MR. FITZGERALD: April 2010.

CHAIR BEACH: 2010, with some specific questions and then NIOSH's later report, April 2010, replies to all those questions.

MR. FITZGERALD: May 2011.

CHAIR BEACH: Or excuse me, May 2011.

MR. FITZGERALD: Right.

CHAIR BEACH: Okay, so who wants

to kick this off? NIOSH? Clarify?

MR. FITZGERALD: Yes, clarify. I think we had a lot of question on D&D and there was a response, and I can't remember if it was earlier than April, initial response, at the last Work Group meeting in January of 2010, and I think there was a position advanced that there was a -- it wasn't an issue with bioassay compliance with D&D workers, yes, there's a couple of papers.

And I think at that stage we were concerned about getting more validation of that assertion. I think it was a 90 percent compliance rate that was indicated and we were concerned because that seemed to be a pretty high compliance rate compared with other sites.

And that was the genesis of the note back and the NIOSH response in May went one step further and did a sampling analysis of the RWPs and I defer to Brant to go through that part of it.

But it was pretty in-depth sampling of the compliance rate that was associated with a random selection of RWPs, and I think it a '97, '98, it was the late '90s as far as D&D operations.

And that came out with a verification of something in the order of 84 to 90 percent, something like that, high '80s, which is still an amazingly high compliance rate but that certainly validates that for whatever reason Mound had a lot of success in getting D&D workers to in fact follow through and get bioassay data into the system, which satisfies our concern that the coworker model, if it's going to be applicable across the board to both the operations as well as the D&D area, you would need to at least have some confidence that you are using a full deck of data, that you are not being short-changed on the D&D side, which is sometimes the case when you are dealing with transient workers that you don't have a whole success rate with

having them leave bioassays when they leave the site.

So I guess in sum, if that validation you know, with that validation and that sampling analysis, you know, we accept that high rate even though again, we remain surprised at that rate, it seems to be in fact the case at Mound that they had a very high compliance rate on D&D bioassays.

So you know, I think that satisfies our original concern that there wasn't sufficient validation, that that compliance rate was in fact as high as it appears to be.

So that's a short-hand answer. I'll turn over to Brant.

DR. ULSH: I'll respond to any specific questions, but you know, if we are in agreement, why rock the boat?

CHAIR BEACH: Your response speaks for itself, right? Is there any other comments, concerns, about this time period? I

know I was pushing for this, more data, because the 90 percent seemed awful high and so I do appreciate the work that went into this and the fact that you did it for us, and I have no further questions.

MR. KATZ: Closed.

CHAIR BEACH: Closed. Okay. How are we doing for time?

MEMBER ZIEMER: Pretty good.

CHAIR BEACH: So, the rest of the agenda basically deals with tritides and adequacy and completeness of internal data. The work packets from NIOSH to SC&A came just recently so this portion will get into the discussion, but it's mostly for clarification, because SC&A is not prepared to give us an answer at this time.

So I think tritides, hopefully we can get done before lunch and then come back and finish up with the adequacy.

And if not, we will just --

(Laughter.)

Okay.

MR. FITZGERALD: Hunger will be a motivator.

CHAIR BEACH: Do you want to kick off with questions, or NIOSH? I guess NIOSH, you maybe should since it was your --

MR. FITZGERALD: Yes, yes, it's a new approach.

CHAIR BEACH: It was your approach, yes.

DR. ULSH: Okay, tritides, right?

CHAIR BEACH: Yes.

DR. ULSH: Okay. Basically the situation with tritides is Mound did a lot of work with tritides for the purpose of tritium storage, and there was some question raised about how we could adequately bound the dose for those compounds because some tritides behave very differently from the more common type of tritium, the more common form of tritium that we are used to thinking about, and that's gaseous or tritiated water, which

is very mobile, goes basically the whole body is the target organs.

Tritides are different. They are a particulate so it's more of a situation where the dose is concentrated in the lungs and there was some question about, for some of the less mobile of these tritide compounds, the adequacy of urinalysis data.

In addition, there was the question that has been discussed about which workers were exposed and which were not. So one of the issues that we clarified over the course of these discussions was that we are not talking about all tritide compounds, just those very immobile type of tritide compounds.

And for that particular compound, NIOSH has advanced the position that those workers were all bioassayed, just like any other tritium worker at Mound, and we knew who those workers were by name, based on worker interviews, and furthermore, we also knew of a few specific incidents that occurred and who

was involved with that.

I think some concern was expressed about that approach by the Working Group but that was our latest position.

Now, at the last Mound Working Group meeting, I mentioned that we also had access to some tritium wipe samples, because this had to do with the concern that, yes, okay, we have got the names of these workers who were primarily involved, but what about the maintenance workers or the other people who could have been exposed.

We took the position that there wasn't a realistic exposure potential for those folks but concern remained.

So I mentioned that we had these wipe samples for the areas where this particular compound was handled and I think it was Paul, if I recall correctly, requested that we go ahead and look at those wipe samples and come up with some kind of an analysis on whether or not that indicated an

exposure potential.

So, NIOSH just recently submitted to the Working Group and to SC&A, I think it was, I've got a date, it was November 7th, a series of files that presented our analysis.

In the email that I sent, transmitting those files, I stated that we were in the process of collating all this into a more coherent format, a White Paper, but it would be easier to look at, but I wanted to get it to you guys with as much lead time for this meeting as possible.

And basically the outcome of that analysis was we did not see an indication of widespread exposure to tritide compounds, based on the tritium wipe samples that were conducted in those areas.

So that's kind of the 40,000-foot view of our analysis. I'm sure that you all have some specific questions.

MR. FITZGERALD: Okay. Well I think as Josie pointed out, we are still -- I

think we have had a couple of weeks so we are still going through the files and we do appreciate getting the files. It certainly gives us a running start at it.

So our questions are more clarifying as you know, we are sort of half way through this, and we'd like the benefit of just understanding it better.

But I want to break it into two parts, you know, one I think is the classic plausibility question. We have been working this issue it seems like a long time, but just trying to get to this question of what is plausible in terms of dose reconstructability and we have been through a number of, you know a number of loops dealing with the, as you have pointed out, the -- can you identify the workers, exposure potential, those kinds of things.

And then there's the question of -- - of technical feasibility. You know, if one can get to a source term, can you in fact use

resuspension factors and other parameters to come up with a bounding estimate that could be used that way?

And I think that certainly is a technical feasibility question and we are working hard at that, looking at it from the standpoint of the resuspension factors and the analysis you have provided in those papers, these initial papers.

But I want to step back to part one, because I really see them as two separate questions, you know, one is the plausibility of going this route. This is certainly a new way to look at this. We haven't looked at it quite this way.

And the second part is, if you do look at it that way, is it technically feasible to derive that dose value in the process that you have presented?

So on the plausibility side, and now, going back in time, we had this conversation in Santa Fe at the Board meeting.

Jim Neton and I presented on this question of exposure potential, and trying to look at conceptually under the Act, certainly how -- and the regulations -- how one frames up plausibility from the standpoint of -- once you have established the exposure potential, what data come into play?

And in this case, for tritides, the dilemma is that of course they didn't certainly have a radiological control program focused on that, and therefore there weren't any bioassays as far as looking for tritides, inside the tritides, air sampling and source term characterization.

So we really don't have a lot of the specific kinds of data that would be helpful. And as I understand what you are proposing, and again, you know, we are just looking at this fairly fresh, you are proposing that what we do have is a lot of tritium swipes for the rooms involved in handling, and that you know, in terms of

looking for a conservative estimation of what the tritide exposure and therefore dose might be, you can make some assumptions going in that if what you are smearing is in fact 100 percent tritide, you can then go from there and do -- using resuspension factors come up with a 96^{th}, 98^{th} percentile, you know, distribution and therefore come up with an inarguably conservative number for what a worker might in fact -- what tritide might be available for that worker to breathe in.

Now conceptually am I getting that right or not? Am I off?

DR. ULSH: I don't want to interrupt.

MR. FITZGERALD: Oh okay. What I'm getting at though is I -- you know I -- we have gone through this hierarchy of quantitative data as sort of the basis for trying to figure out dose reconstructability, and again we had that conversation back at the Board meeting in Santa Fe which was kind of

focused on you know, what is the basis for making that judgement.

And in this case we don't really have that site-specific information, and we said this in the very beginning, that one of the dilemmas with tritide, we don't have good, site-specific information that would tell you, you know, what exactly is that insoluble tritide source term that you could then somehow come up with a calculation for.

And in my opinion, and we've talked about this before, when you have to substitute a compound or a nuclide, in this case you are substituting something that's -- it's very much a carrier agent, the tritium for the tritide, to me it's sort of a substitute-nuclide issue of saying we don't have the information for tritide but we do have the information for tritium, and if we make that leap, you know, if we can make the leap, the presumption that we call it 100 percent tritide, that would in fact lead us

down a path of a very conservative, inarguably bounding estimate.

But I would question that leap, saying that you know, if we don't have the -- any of the quantitative information on tritides, to make the leap of assuming 100 percent tritide as the starting point for doing your swipe analysis, I think that is substituting another compound to enable you to make a very conservative, you know, inarguably conservative estimate, but one that is not rooted in the site information that one needs to use to come up with dose reconstruction with sufficient accuracy.

You see where I am going?

DR. NETON: This is -- I would argue that you know -- I would agree with you if those numbers, if those analyses came up to be extremely high values, tens of rems, hundreds of rems, thousands of rems.

But they don't. And in fact what I think the analysis demonstrated more than

anything is that there are oftentimes good reasons why people aren't monitored for bioassay, and it has to do with the source term that's available.

And I think the tritium smears clearly identify the source term that's available to these workers and under some very conservative assumptions, the source term can't get you there to get you doses that exceed -- I think 100 millirem was somewhere near the highest ones, and then more often than not they were in the 1 to 10 millirem range.

So I don't know that that puts you in a realm of insufficent accuracy or -- I think it's just using the data that are there to demonstrate --

MR. FITZGERALD: Well, how do you, how do yo know if you don't -- I mean you can assume, based on professional judgment, that the tritide could not contribute more than what you are saying. It would be trivial.

But on the other hand there's no data that would back that up per se. It's a small component of the tritium but you don't know how big or small --

DR. NETON: Yes but it would be just much lower, I mean the doses would be much lower.

MR. FITZGERALD: But before we go there, okay, we went through this with Pantex. Clearly this is a question of dose reconstructability and not dose level, and I just want to make sure we don't get into weighing the dose reconstructability by virtue of how much dose it delivers because I, you know, I don't think that's the issue as much as can you come up with a coherent way of applying the site-specific information that's available to base a plausible dose reconstruction on?

DR. NETON: I don't buy that argument at all.

MR. SHEEHAN: Well, let me see,

hold on. I think we are getting bottled up in language, at least I am not following the discussion. We started with tritium bioassay. To say that there wasn't monitoring is not entirely accurate. There was monitoring. It was tritium bioassay. The results of tritium air monitoring and there was tritium swipe monitoring.

Now we recognize that this is a different form of tritium that we are talking about than is more common, but the way that you sample for a particulate, especially an insoluble particulate, is through swipe monitoring, and fact that's what DOE did to ensure that they were complying with regulations, at least in the later years, was they recognized that the missed dose was higher than you would want from a regulatory compliance standpoint using bioassay, and therefore they relied on swipe monitoring because it gave you a lower missed dose.

And that's what we have shown

here, is that there is no huge potential -- there is no potential for huge missed doses.

DR. NETON: Right, but I think what Joe was getting at though is that we haven't demonstrated that it's either tritium or tritide that we are smearing and we are substituting a more insoluble form and I would argue we do this all the time when we substitute type S uranium or type Super S or type M or even F.

It's built into our regulations and we will default to the most claimant-favorable assumption that's there to quantify the dose, put an upper bound on it, and that's just part and parcel of our regulations, and I don't see that -- I don't see the argument that you are making that we are substituting a more insoluble form because we don't know the exact solubility nature of the tritium.

MR. FITZGERALD: No, no, but I think this is -- I would say this is different, though. Well, I think you are

talking about, you know, going to smears, now stepping back from this issue, and this is why the Work Group is concerned, that you know, you don't have the traditional and key pieces of the personnel monitoring data that you usually have, because again, there wasn't a consciousness, certainly wasn't attention or focus on monitoring for insoluble particulate tritium.

It just -- that didn't come about until the late '80s and into the -- I'm sorry, the late '90s and into the 2000s, that's when that consciousness arose in DOE and it came up with the approach for it.

So you didn't have any of that, and you know, when you are smearing, you are smearing for tritium, I mean you are basically smearing for tritium and that's the data you have.

And I am just saying that in order to apply your tritium data, your smear data, you have to make an assumption that's not

rooted in any site-specific information, an assumption that 100 percent of it is going to be tritides.

We went through this discussion, I think, early on, when we got into the tritide issue, I think there was a proposal on the table at the time that, you know, one approach to solving this issue was, why don't we assume that all the tritium that was in the air being bioassayed for the tritium workers was tritides, and yes, that would present a very high and very conservative dose to the lung but that certainly would be a very straightforward way to deal with the question of you know, tritides being mixed in with the tritium.

And I think the conclusion, well that's not plausible to assume that you know, that tritium in the air was all tritide and that all the lung cancers would be in principle based on that.

And so we -- that was backed away

from but that was sort of a thinking out loud you know --

DR. NETON: I'm not sure we're not doing that now.

MR. FITZGERALD: Well, that's what I'm saying. I think we are sort of back to that construct of saying --

DR. NETON: I would challenge you to explain to me why that is any different than looking at the solubility properties of the various compounds that are available and picking the most insoluble one to be claimant-favorable, and we do that many, many, almost all the time.

MR. FITZGERALD: But in this case --

DR. NETON: Because it's an insoluble compound of hydrogen, just like a more insoluble form of uranium that's an oxide is more insoluble than a fluoride form. It's what it's bound to that determines its solubility class.

So this is hydrogen and some metal binding versus some uranium and oxygen or uranium and fluorine. I don't see the difference. I really, I really have trouble with that.

DR. ULSH: And we're not proposing this as necessarily a dose reconstruction methodology. What we are saying is, even under worst-case assumptions it doesn't give you a dose which is not sufficiently accurate.

We are saying that this is not an SEC issue, because here is this analysis that makes very conservative assumptions and even then we don't get --

DR. NETON: And I don't see the connection to the Pantex where we had no monitoring data there, no bioassay, we were back-extrapolating.

MR. FITZGERALD: Well, again --

DR. NETON: If we had smears on all of these pits during that year I think we would argue that we could probably have done

the does reconstruction at Pantex.

MR. FITZGERALD: But if you are going this way, you know, again we went through this discussion two years ago, that you could also assume that the tritium that workers were exposed to in general were tritides, and it would be the same kind of thing. You are going the most conservative route assuming that all the tritium was the tritide, most insoluble form, and --

DR. NETON: If there was potential. There has to be some reasonable source term there that would indicate that it would be a tritide. If it was all water vapor tritium, we would never assume that source term.

But if there are conditions there that exist that would make it obvious that there is a more -- there is potential for a more insoluble source term, that's when we would invoke that.

MR. FITZGERALD: But again, I

think the issue for the Work Group though, and this is where I still have a problem Jim, is the, you know, is it in fact plausible, realistic, rooted in site-specific data, that 100 percent of surfaces in these two rooms were in fact coated with insoluble tritides?

I don't think that's plausible. I mean it's a means to an end but is it plausible to even make that assumption?

DR. ULSH: In fact that's the argument that we made. This stuff is handled inside of a tritium-tight glove box, and if there's any tritium that escapes it's going to be water vapor. It's not going to be particulate.

But I think you questioned that assumption.

MR. FITZGERALD: Yes I have.

DR. ULSH: So to make the argument come to closure, we said well even if we accept your argument, even if that's true, the doses are not thousands of rem. It's at most

100 millirem.

MR. FITZGERALD: Well, I want to separate how much dose, you know, to whether or not one can plausibly assume 100 percent contamination with -- surface contamination with insoluble tritide.

That's the part -- the dose part is a separate issue.

DR. ULSH: Well, if you want us to assume 10 percent or 1 percent or 5 percent, we can do that.

MR. FITZGERALD: You can assume anything you want. That's what I'm saying. We don't know. Nobody knows and you know, I'm just saying that there's no site-specific basis for assuming anything as far as surface contamination with tritides. We don't know.

MEMBER ZIEMER: Well I think the argument that is made for, for example high-fired plutonium is a similar argument on the percent-wise.

When you go to -- if you were

monitoring an area where you knew there were tritides, suppose you knew a priori rather than retrospectively, that there were tritides there, your smearing would be the same, your air sampling I think would be the same, your counting methods would be the same.

And then what would you do with the data?

MR. FITZGERALD: You wouldn't -- you wouldn't be able to count -- see there wasn't any means to ascertain what the tritide component was.

MEMBER ZIEMER: No, I know, but what would you do if you knew that they were using both with your sampling data is the point, I mean you take a tritium smear, you count it, you analyze it, if you want to use that to assign dose, what are you going to do? You are going to put an upper limit on it. It can't be more than this.

MR. FITZGERALD: Well I think they came up with the protocol --

MEMBER ZIEMER: It's not an unreasonable bounding in the sense that you have a sample. It's not like a location where we are saying we don't know what the air concentration was so let's load it up as much as we can with something that's almost unbreathable and then calculate it. I mean, you have the data.

So if you want to bound, you can assume it's all tritide, and that puts -- that's not an unreasonable bound since you have an actual number and the worst case is that it's all tritides, sure, it probably most of the time isn't.

MR. FITZGERALD: I don't think we know.

MEMBER ZIEMER: We don't. But it can't be more than 100 percent so why wouldn't that bound it?

MR. KATZ: But if we don't know, I mean then that throws out the -- then you are saying it is plausible in which case there's

not a problem with using it as a bounding.

MR. FITZGERALD: Well, I'm saying --

(Simultaneous speaking.)

MR. FITZGERALD: There's nothing from the site that would give you any basis for knowing anything, and I -- if you can't apply anything from the site, other than the fact that you don't know, I am just raising this question, if you don't know anything -- if you have no information from the site other than the fact that we have no data that would lead you to conclude anything in terms of contamination, it sort of leaves you with the only possibility of saying, well, you know, you go to 100 percent but there's no basis from the site. There's nothing that tells you from the site that that's even a plausible number.

MEMBER ZIEMER: Well you have the possibility of its being a tritide to start with.

MR. FITZGERALD: Yes, but certainly the exposure potential, the possibility of it being a tritide. I'm just saying that that's as far as it goes.

You don't have any more information than that.

DR. MAURO:. This is John. I have a couple of questions, if I may.

CHAIR BEACH: Go ahead, John.

DR. MAURO:. Yes, I can understand, and we discussed this a bit over the weekend, and certainly Joe could probably expand upon it, we have discussed that there might in fact be a couple of time periods at play here, where, one, do you recall that there was a time that the tritium was being processed as tritides, was being processed, and then a time period when it wasn't. And I am visualizing you are taking swipe samples and let's say you are into a time period where you are no longer processing, perhaps there is no tritiated water or tritium being processed

in the building, and you are -- but now you have swipe samples taken from surfaces.

At that point in time, and this is a -- I was thinking that -- what would I expect to be on surfaces and those of you who are more familiar with swipe samples for tritium maybe could answer this. So this is more of a question.

Would you expect any old tritiated water that might have deposited on surfaces to clear away eventually because of evaporation and other processes while the tritides would sort of stay there, on a surface? This is after you are no longer processing.

So I guess the question I have is that I am trying to find a way to convince myself that, at least during certain time periods, the approach that you have taken might be plausible, if you feel that, well, you know, we are at a time period when you would expect the only thing left on surfaces was tritides.

It's a question and those of you who have worked with tritium, you know, I guess there's really two questions in one here. One is, were there time periods when there was really no operations going on, with either tritide, or where tritium or tritides was being used, and do you have swipe samples for that time period?

And the second question is more of a technical one. Would you expect there to be tritiated water on surfaces, oh, a year or so after you have stopped operations. Wouldn't they sort of go away by evaporative processes or does tritiated water sort of stick around anyway?

MR. STIVER: John, this is John Stiver. I have looked into the data. We are going to actually get into that a little later, about the data representativeness and the completeness.

But one thing that we do have is that for all these reports that list the swipe

samples, we also have air sampling data, and recall that the air samples used a pre-filter to get rid of the particulates so you can pretty safe that what you are looking at is the oxide H2O, or tritiated gas in the -- those particular measurements were about, if I recall correct, about three orders of magnitude higher than what you would get by assuming the high-side resuspension factor in the 95^{th} percentile from the monthly swipe data.

So it looks like there is indeed tritiated water in the atmosphere in those rooms during the period in which this data were collected. Now --

DR. MAURO:. Okay good, that answers the question, the first part.

MR. STIVER: Getting back to the issue of when operations were going or not, you are kind of getting into a classified issue there and so I don't really want to go there at this point.

But if you were to assume that this is post-operational, and we do have reason to believe that some of the data are indeed post-operational, that you may see that you are not just looking at tritides.

Plus you don't just have those two. You've got you know, hydrogen is essentially highly reactive, as you know, and tritium especially so, because of the ionization potential. It can then react much easily with other organics and dust particles and other things in that room aside from tritides, so you have that complicating factor as well.

DR. BUCHANAN: This is Ron Buchanan, SC&A, and John, no, water-based tritium would not go away in a year. It certainly moves around more than the tritides, but it would not evaporate or disappear in any reasonable amount of time.

It's a real long thing to catch and it doesn't stay put but it doesn't go away

either. It moves around on surfaces and in the air and in the buildings.

So you couldn't eliminate water-based tritium after a period of time.

DR. MAURO:. Okay, no, good. And that helps me think it through. John Stiver, you had mentioned that there were these air samples -- collected quite a bit of air sampling data and there was a pre-filter.

And I guess this is -- did we or did NIOSH see any data measuring the pre-filter because if there were going to be any particulates, that's where you would find them?

MR. STIVER: I would have to ask Brant or Jim, if you guys would --

DR. ULSH: Go ahead. Take a shot.

MR. STIVER: If you had, I think you would have used it.

MS. JESSEN: I know Mel Chew is on the line. Mel, is anyone else from your team on line that could field that question? Or

you?

DR. CHEW: I'm online. Go ahead.

DR. ULSH: No, you go ahead.

(Laughter.)

DR. CHEW: Ask the question again.

MR. KATZ: The question, Mel, is whether anyone has looked or seen any data on the pre-filters, as to whether they -- we have such data.

DR. CHEW: Not that I recall. That doesn't necessarily mean that there wasn't any such data, but I'm not sure we analyzed any of the data that was on a pre-filter.

But I'm sure -- I think though, Brant, you and I had that discussion, we were -- the pre-filters were counted, is that right? And so there should be some data.

DR. ULSH: I'm sure that they were but keep in mind, we started with the tritium swipe data because that's what we were asked to analyze.

DR. MAURO:. This is John Mauro. If you have the counts of tritium on the pre-filters somewhere, that's golden information.

DR. NETON: Well, I don't think so John, and I mean we run into the same -- it's sort of a reverse argument here. I would posit that these are probably not breathing zone air samples. They are room general area air samples, and so, to equate that with its potential exposure to the worker from a recent stretch of source term doing some kind of activity, as a maintenance function or something like that, is probably not going to be a good comparison.

MEMBER SCHOFIELD: You know what, I've got a general question. I'd like to hear some clarification on these. On the swipe samples, did they take them and, say they took maybe a series of three, they let the first one cook for 30 minutes, second one, one hour, then one and a half hours, and then they take an average of those three?

Or did they after, say, an hour and a half, they take that one, or did they count them immediately? I mean this is definitely going to have an effect on the final numbers, how they actually handled the --

DR. NETON: Are you talking about letting them decay for radon? Is that what you are getting at?

MEMBER SCHOFIELD: Yes, letting them sit in there and decay for radon or possibly even --

DR. NETON: Sure they --

MEMBER SCHOFIELD: cooked them for a while. Because I know this -- I have seen this process go on at times where they give them a series of 30 minutes, take a 30-minute, one-hour and a one and a one and a half hour -

DR. NETON: The radon progeny that might be trapped in --

MEMBER SCHOFIELD: Yes.

MEMBER ZIEMER: Not the swipes

though, the --

MR. STIVER: This is Stiver again. There is some examples of, in some of the historical references, where they were trying to develop methods to really get a handle on this using inhalation counting, that you would see over time that if you recounted the samples, it would go up, and that would reflect the increasing amount of material that was actually going into --

MEMBER SCHOFIELD: Yes, I have actually seen this go on. So I mean I know it was done some -- you know like I said , I can only refer to LANL as having seen some of this done and that's why I'm asking.

MR. STIVER: Most of what I've seen in that regard is related to radon. You wanted to -- you want the radon to stay away.

MEMBER SCHOFIELD: Just looking at radon? Okay. That's what I need to know.

CHAIR BEACH: Joe, any other questions?

MR. FITZGERALD: No I think we have got to go back since we have gotten into the technical feasibility question. As far as the completeness, I guess we have got to be careful about dates and locations, but is there any clarifying questions? We are in the middle of writing up the analysis so again, we are a little hesitant about trying to broach things that were not fully -- fully developed or fully vetted by DOE.

Is there anything that we can add? Ron, Bob, John?

MR. STIVER: Bob Barton had put together kind of a data completeness summary and I had made some handouts of that. It was just the tables that -- look, it's the data that are available --

MR. FITZGERALD: And again over the last couple of weeks what we have done is looked at the spread of the data based on what you have given us and one question, I know we have had Brant, is the focus seems to be on

the individual swipe data from '85 to '89, I think that was the four years that were included, as I recall.

And you know the period in question is '80 to 90, I think it is. And so my question is how representative is '85 to '89 for that 9 or 10 years that we are talking about.

I mean I can see where you -- you took the swipe -- individual swipe data for those four years and that covers, I think it covers pretty well the D&D era. But I'm -- we are also concerned about whether it would encompass any operations as well, without getting into specifics obviously.

DR. ULSH: I'm trying to think about what I can say. We chose the time period that we chose because there is a particular operation that was in question and we chose the time period to encompass the operation locations where -- that were relevant to that question.

MR. STIVER: We have -- kind of wondering about that, because it looks like the year you chose, you actually had the actual data, and some of the other years, I know in the early '80s, were just a high/low average and a number of samples.

But just the summary data. So we are thinking that maybe that was part of the reason why you guys stuck with those years.

DR. ULSH: I understand your question. Let's just note that that's a question and then we'll --

MR. FITZGERALD: Something for later but that was one issue that came out of our initial look, to try to understand better how that data -- why that data was being provided the way it was.

MR. STIVER: I'd like to move on to do the summary if --

MR. FITZGERALD: Yes, because he -- - he hasn't looked at sensitive stuff so he's fine. He can talk.

MR. STIVER: Yes, Bob are you on the line?

MR. BARTON: Yes, I'm here.

(Simultaneous speaking.)

MR. BARTON: In addition to the data that NIOSH had compiled. For those like Joe just mentioned, that NIOSH compiled data for 1985 up through 1989, you have the full year in some cases. In some cases there was only half the year or something like that, and we originally thought that was just -- because those were reports that are available that actually show you where in these particular rooms this swipe was given.

Beyond that, as John mentioned, there were reports that basically will tell you on a daily basis how many swipes were taken and what the high, the low and the average for that day was.

The only problem with those reports, if you don't know exactly where in the room the swipes were taken, so you don't

know if they are on work stations or anything, but you could probably reasonably assume they are in similar locations as to the other reports that NIOSH compiled.

I know I am not supposed to get too specific about what the locations are, but I can say that there's two rooms that we looked at.

The first room really didn't have any swipe data we could find until about 1983 and the second room -- we checked that data for all the years in the '80s except for 1981, and typically you had sort of data almost every single week of the year, and depending on which room it was you had between 15-or 30-some odd samples taken on a daily basis.

So I guess that would kind of sum up what available data we were able to find anyway. Like I said before the problem years appear to be '80 to '82 for one room and then 1981 for the other room.

But other than that there appears

to be -- at least there's summary swipe data really on a daily basis for the remaining years of the 1980s.

DR. MAURO:. This is John. I have a question regarding the swipe data. The presumption is that the airborne tritides are there as a result of resuspension, and not as a result of let's say direct leakage or you know, being injected direct -- it's almost you know, I think of it like a uranium facility that may be hammering or grinding uranium.

And if you are in a process of doing that, you have airborne uranium particulates from two sources -- the stuff that is being resuspended, deposited, accumulated over time, on surfaces and there's material that is being injected directly into the air as you are performing your operation.

And of course, this is a completely different operation but it's conceptually what I have in my head right now.

And if you are using swipe samples

and resuspension factors, the presumption is the predominant amount -- it's predominantly the airborne activity that the person might be breathing is from resuspension.

Now that being the case, let's just presume that for a moment, certainly if you have sufficient swipe data that characterizes the amount of surface contamination, you certainly can apply a conservative resuspension factor, and assuming that the material on the surface is predominantly tritides, or as Jim said, let's just default to the worst case, let's assume it's all tritides.

Now to go back to the air sampling data for a minute and the filter paper, Jim you had mentioned that -- you are right, it's not breathing zone, but as you recall, in many of our other conversations regarding residual period, and where you are using surface contamination and then resuspension factors, you know we always argue 10 to the minus 6, 10

to the minus 5 per meter, but we were always in agreement that once you are in the mode where the airborne activity that you are observing, that might be occurring is from resuspension, the general air samples are not that bad. I'll explain what I am trying to say.

If it turns out you have a general air sample, the reason being -- the problem with having -- not having breathing zone samples occurs when a person might be close to the source of the material that is generating and injecting the aerosol into the breathing zone.

But once you are at a place where the source is a diffuse, widely dispersed surface contamination that is being kicked up from mechanical disturbance, then the air samples in combination -- the air sample that you would measure, even with a general air sampler, would be generally representative of what's in the air from resuspension.

So, the question I guess I pose is that, if there are air particulate samples, the pre-filters available, and where that was collected, and you are at a time period where there is a general consensus that the material that is airborne is from resuspension, and you have sufficient surface swipe sample data, you are in a mode where you are starting to close down very nicely on the problem and you are starting to get the kinds of data that's really going to answer your question.

So I go back to say that, you know, given those sets of conditions I just described, the air particulate data, if it exists, might very well be useful.

DR. NETON: Yes, I hear what you are saying John but I think that this might be a slightly different situation than we normally encounter when we are talking about a uranium facility, like a vast -- inside of a plant.

This is a, in my impression, more

like a laboratory type of a situation, like a room and you have contaminated work surfaces, lab benches, you know, all kind of stuff like that, where it's slightly different.

So any kind of mechanical agitation you know cleaning, wiping, you know, that sort of thing is very different, I think, than when we have applied this at a very large uranium type facility. That's my opinion.

DR. ULSH: I think I can provide a little more background on why we chose the time frames that we did. Keep in mind we are talking about a tritium compound here, so remember our earlier discussion about radon and the R and SW buildings?

We are talking about those same areas, because that's where this happened. So we were asked to focus on the post-1980 period because we already have an SEC Class that goes up to 1980 that would include tritium workers.

So there was a special concern about post-1980. I think I can also say that

work with the troublesome compounds had concluded by 1980, so we are talking about a period after when work with -- active work with those compounds was occurring.

That's not to say that there wasn't any of that material left on site. They had some you know historical archive samples, but the active work had concluded by 1980.

MEMBER ZIEMER: Which is to say then that this would be resuspension only, no source term generation per se.

DR. ULSH: Well, for the most part.

MR. FITZGERALD: Yes, I would have to qualify this and we can't get into details.

MEMBER ZIEMER: Okay, I understand.

MR. FITZGERALD: There was evolutions after 1980 that the Work Group needs to look at along with NIOSH and SC&A that would help put this to bed and I don't

think we can do it here.

MEMBER ZIEMER: Yes.

DR. MAURO:. I have one more question, and something that was -- Joe, you brought it up and maybe you could elaborate because you know more about the facility.

But it's my understanding that where the tritides might be located might very well be in duct work, and the exposures that people might have experienced from resuspension, may very well have been during maintenance, repair or dismantlement work, where you are opening up an HVAC duct for maintenance or removal.

And that's where you are going to get your spoonful of a tritide as opposed to let's say the swipes that you may routinely take throughout a bench -- the surface of a bench or the floor or the walls.

So my question goes toward the scenario, does NIOSH envision that there might be some scenarios where workers are involved

in doing their job where they could be exposed to uniquely high concentrations of tritides that are not captured by the swipe sample data?

DR. ULSH: We have discussed this issue in the past and we interviewed a worker who was involved with taking down the duct work. His slant in this question, his answer was, look, we had -- I think he said 100 CFM airflow in the duct work.

If you are talking about particulates that are respirable, it would have been sucked out the duct and blown up the stack.

If you are talking about bigger particulates, well then it's not really a concern from a respiratory standpoint.

So it seems like the -- you can say that the respirable fraction of whatever might have been up there, if anything, would have been sucked out the duct work and blown away.

DR. MAURO:. I guess I misunderstood. If you are working on the duct work, let's say for maintenance or repair or dismantlement, there wouldn't be any air moving through that duct work. Are you saying that any -- oh I think I see what you are saying. You are saying that you wouldn't expect there to be an accumulation in the duct work of respirable particulates because they would have blown out during the time when there was an operation.

DR. ULSH: Well that was his answer to me.

DR. MAURO:. Yes, I mean I have got to say, my -- I guess my readings notwithstanding, the postulate that any respirable particles would have been blown out during operations when that duct was being run, with the 100 CFM, I have got to say I am a little concerned about that because I think that you do have buildup of particulates in duct work that later on when you -- and

certainly the folks involved in maintenance could probably speak to this -- that no, there is an accumulation -- there may be filters, there may be vents where you do accumulate particulates in duct work, and when you go and open them up, for D&D, you will see that yes, there is the potential for particulate inhalation when you are working with these duct works, that there can be respirable particles resuspended during that kind of operation.

So I am not convinced that the inside of a duct has been cleaned of any respirable particles during operation.

DR. ULSH: Well, the second part of his argument was that whenever they did that, to go up in D&D or take down duct work, they did smear samples and they never saw anything.

MR. FITZGERALD: Yes let -- can I jump in because I think John is responding to something that I had identified. This was an

interview, and I can give you the name off the phone, where it was an incident where some workers who were in fact were doing exactly this, were dismantling duct work on I think it was SW, were contaminated, had positive nose swipes, and they thought it was Pu initially and then they did some analysis and realized it wasn't Pu, and in fact was tritium.

Now that realization was there and it was after the fact. This was certainly later on. I think it was during the D&D phase actually. This was just in the '90s.

And I can give you that interview, I mean we have done it already, and that's just an indicator of -- and you know this is -- looking at just the representativeness, can one rely on the smears as a representative representation of what the workers may have been exposed to.

I just saw that one incident and was questioning whether or not -- well, that might be a more elevated case because

certainly duct work would have collected material over a length of time, and this was the actual exposure that took place in the incident.

So that was the question mark. And again, we are very early in this process but that was a question that I would want to raise to your attention and just get some reaction.

DR. NETON: First of all I am very, very surprised that they would have mistook tritium for plutonium contamination. I don't know how that would happen.

MR. FITZGERALD: I don't know either.

DR. NETON: You have an alpha particle you are mentioning versus an extremely weak beta --

MR. FITZGERALD: I'll show you the interview. I was most puzzled by --

(Simultaneous speaking.)

DR. NETON: But secondly I would

suspect that this -- I can't believe that a person actually involved in dismantling duct work would not be on some sort of a work permit that would include -- well a respirator, but it would also include some sort of bioassay monitoring.

CHAIR BEACH: They do it all the time.

MR. FITZGERALD: This person was in half mask. The people that were doing the work were in half mask and I couldn't figure out how they came up positive to begin with.

DR. ULSH: Yes.

(Simultaneous speaking.)

MR. FITZGERALD: Something was screwy but I'll point you to the interview. I was questioning --

DR. NETON: I would be curious to look at that and if it's possible we could even look at the RWP.

MR. FITZGERALD: Well the individual is one of the more prominent

individuals we have talked to so it won't be difficult to go back and do a followup.

MEMBER ZIEMER: One other comment, to pick up a little bit on what John Mauro said on bends in the duct work, the duct can act very much like a cascade. In fact we know that respirable particles can impact, depending on the velocity of the air train and the curvatures.

So I don't think we can assume that all respirable stuff was swept out. It could impact and then be loosened later so, just as a comment.

MR. STIVER: And I would like to kind of follow on about what Paul just said. I know when I was working on the NTPR program where you investigated this issue of fallout coming down through the duct work in chips when they'd button the ship up. It actually would go through some of these fallout depositions.

And there was a lot of issue, at

some point they would have to open these up again and a lot of the veterans would claim they got -- this stuff, it just came billowing out onto them.

And so we -- I did some investigations and some analysis, as an aerosol scientist, I just had given the number of bends and flow rates and things.

And I don't recall the exact numbers but you know, it's very specific to a particular case, but there is a good fraction of those small particles that played out in the duct work.

MEMBER CLAWSON: Also -- excuse me -- but it also comes down to the size of the duct going out of there because you are talking 100,000 or 100 cubic feet per minute.

We run 97,000 cubic feet per second and ours are highly contaminated, not that we can't ever get into a duct work until it's been through the HEPA filters because of the contamination. Also the HPs tell us, or

the RadCon techs, we get electrostatic charge sometimes from going to -- and it captures these.

CHAIR BEACH: Okay, so at this point I have one action item for SC&A to provide the interview notes to the Work Group and NIOSH. So that's it. Is there any more clarifying --

MR. FITZGERALD: Interview notes.

CHAIR BEACH: For the --

MR. FITZGERALD: This issue?

CHAIR BEACH: This issue. For the positive sample for the individual --

MEMBER ZIEMER: And you're going to have a formal analysis that you are working on?

MR. FITZGERALD: Oh yes, right, we're two weeks in, so it's --

MEMBER ZIEMER: Are these things that were passed out part of that analysis?

MR. FITZGERALD: That was part of the --

MEMBER ZIEMER: Because these aren't dated or labeled --

MR. FITZGERALD: No, no, in the interests of just keeping things moving we gave you work in progress.

CHAIR BEACH: So we will see that again in a formal --

MR. STIVER: You'll see that in a -- a subsection of the formal report.

MEMBER ZIEMER: Well what happened, they put these in the --

(Simultaneous speaking.)

DR. NETON: Where was this, when was this, and what was this?

CHAIR BEACH: This came out of NIOSH's report. So --

DR. NETON: What did?

(Simultaneous speaking.)

DR. MAURO:. This is John. By way of -- if I can interject. It sounds like that NIOSH folks have filed those files and I scanned over them and as you can see, our

folks did too. But you are actually in the process of preparing an integrated report telling your story and taking your position. Is there actually maybe a lot of the questions and concerns that we have been dabbling in.

DR. ULSH: Well actually, John, all the information that we plan to present in the White Paper is already in those files. We are just going to put it into a more coherent framework.

DR. NETON: Right now you have an email that sort of summarizes basically --

DR. MAURO:. Oh no, that's fine. The only reason I bring it up is that -- so for us to go forward, SC&A to go forward and prepare our White Paper on using the material that you had already sent us I guess last week some time, we are okay with that. Okay.

DR. NETON: Yes, I don't think there would be any reason to wait for our formal, final report because it's not going to say anything different than what you have

already have.

DR. MAURO:. Okay.

MR. STIVER: There's no new analysis or data.

CHAIR BEACH: How soon is your final report coming out?

DR. ULSH: I don't know. I'd have to look it up. Since the information was already presented to the Working Group and to SC&A, I didn't put an extremely high priority on reassembling it into a White Paper, but if you desire that I do that, we can --

MR. STIVER: Our real concern was just that we wouldn't miss any new analysis.

DR. ULSH: No, we are not going to present new analysis in there.

MR. STIVER: If that's the case then we are fine. We are ready to go.

DR. NETON: Yes, I think you know --

CHAIR BEACH: So this means --

DR. NETON: They are moving things

forward.

MR. KATZ: So you're saying there won't be a report, then?

DR. ULSH: Well I'm almost wondering, if SC&A is going to prepare a response to what we have already given you, I am almost wondering if we shouldn't hold off on issuing the White Paper, because then we could respond to it in that White Paper.

MR. FITZGERALD: I think that would be more efficient.

DR. NETON: Yes I -- in the spirit of efficiency I don't know that we need to formalize this into a White Paper. I mean it's there. You have all the relevant information.

DR. ULSH: Don't take that as a direction yet.

(Laughter.)

DR. NETON: I think the concept is pretty straightforward, as you captured it, which is we have all this smear data, we have

analyzed the smear data, those are the dose rates that we came up with, if those are the representative smears for this facility, that's our position now. You guys are starting to take a closer look about the application of that and maybe various other wider activities or processes and what not --

MR. FITZGERALD: One thing I think we do need though before we would close on the White Paper to you all is have a secure meeting, because I think we can't really come to closure on the full response unless we have a candid discussion about time periods and locations, which we will have to have in Germantown.

So I would say we would signal when we had gotten to the point where we have most of it together but haven't crossed those Ts, and then maybe schedule something in Germantown that would I think help close the thing out.

MR. KATZ: Can you give me just a

ballpark sense of calender there?

I mean, you give them out before you deliver your report, right?

MR. FITZGERALD: Right.

(Simultaneous speaking.)

MR. FITZGERALD: This is the wrong time of year. I would say in January some time.

MR. KATZ: Okay. Thanks.

DR. MAURO:. This is John again. One of the things I am a little concerned about is we had a lot of questions that we posed based on looking at the data, some of which, if we had answers to them, could affect, you know, what we have to say in our White Paper.

For example, I'll bring a couple of them up. I have heard some discussion regarding measurements made post-1985 were predominantly the basis for your calculations.

However as I understand it from listening to Bob Barton, there are a number of

measurements of a different nature I guess or level of granularity that were collected in the 1980 to 1985 time period.

Apparently there was some rationale in your -- why you have elected to use the post-1985 data and not use the pre-1985 data.

You know, that's -- and there's a question we had, I wonder why they didn't do that if you know -- I don't know if the logistics work out but that's like a question that would help us understand because you can envision, when we write our reports, we may very well have a statement in it that says, how come, lots of questions that we are raising right now may still be with us.

And the extent to which some of these questions that came up during this meeting can be answered, maybe easily, by NIOSH to supplement what you have already provided us.

Another question was mine, having

to do with the air pre-filters. I guess I did not hear a definitive answer whether those pre-filter samples data from the air samples collected, whether they were counted or not, and whether there are data out there or not.

I know that I for one would be very interested in seeing that data, if it exists. Again, that would be material that may very well emerge in one of our reports when we deliver it, but the extent to which you could address that before then, that would be another supplemental information.

In other words what I'm saying is that in light of the conversation we've had this morning, any supplemental information you could provide that would address some of these questions and concerns we have raised, would certainly help us in writing our report.

CHAIR BEACH: Any idea if that pre-filter data exists?

DR. ULSH: No, we can look for it.

MR. STIVER: I for one would like

to see that.

CHAIR BEACH: Okay, so action item for NIOSH to look for pre-filter data. My guess is they threw it away because that's not what they were after but --

DR. MAURO:. Yes.

CHAIR BEACH: I don't know for sure.

MR. STIVER: More than likely, yes. But, John, the other issue of that time frame I think is going to happen at the end of the classification. It's going to have to be -- it's not something we can deal with in an open discussion.

CHAIR BEACH: So if we shoot for a January Germantown meeting, maybe a couple of weeks after that we can look for SC&A's report.

DR. MAURO:. While you're scheduling that, I am sorry to interrupt again, because there are things in my -- another question. This matter of airborne

tritides that people might have been inhaling. As I mentioned earlier, they are from two sources, namely resuspension, and also direct injection.

Right now I believe the material you send us is silent related to what assurance do we have that applying the resuspension factor to surface contamination, the way in which you plan to do it, will also appropriately bound inhalations that might have occurred during time periods -- this is the question -- were there any operations going on where you had direct injection of tritides into the air in addition to resuspension for this time period of interest, namely I guess post-1980, or are we dealing with a time period when there was no operations and there was no direct injection, of possible injection of tritides into the air?

DR. ULSH: Let's talk in Germantown.

CHAIR BEACH: Yes, that's a good topic for Germantown.

DR. MAURO:. Okay, if you could answer that, because as you can imagine, I am pretty familiar with the subject and the literature on tritides, and the resuspension factor -- that's right, I'm sorry -- on resuspension factors, and in general, their intent is really for the pathway of you know, surface contamination, although a lot of it, quite frankly, a lot of the data that was collected on air samples and surface samples was collected actually during operations.

So interestingly, some of the higher-end resuspension factors that they derive in the literature was actually derived during operations, and they are reflected both.

But that's a complicating factor that you don't want to have to deal with if you can avoid it.

You see where I'm headed? So the

degree to which something could be said about that, if you can, that would also help us in our deliberations.

MR. KATZ: Thank you, John.

CHAIR BEACH: Anything else?

MEMBER SCHOFIELD: I wouldn't be surprised if those numbers would be higher during the operation.

DR. MAURO:. Yes, during the operation -- that's, you see, I've got to tell you what we are thinking, if in fact there was some operations going on when the swipe samples were collected and when the -- when we are going to use them. In other words we are going to -- let's say it turns out in the early 1980s there were operations -- I'm making this up -- there were operations going on and any person working there that wasn't wearing any respiratory protection would say when he -- any inhalation he may have experienced would reflect what was directly injected from leakages or whatever the process

is, I'm not sure, and resuspension.

Now, then you are in this difficult situation of arguing that the resuspension factor that we are using and the data we are using from surface contamination is more than adequate to cover the fact that the person was exposed not only to resuspension, but direct airborne injection.

It's a complication that makes it difficult to accept your method, if that scenario was real. If it turns out that all the exposures that people might have experienced of concern to us today are solely from resuspension, well, that simplifies our problem and it makes your approach a little bit more compatible with what the intent of the resuspension factor is.

DR. ULSH: Well, I can maybe provide some clarification right now, maybe, if you don't ask me a whole lot of questions. These were not abandoned facilities where there was only residual contamination. These

are facilities where there was active work still going on, including active work with tritium.

DR. MAURO:. Okay. With tritium but not necessarily tritides.

DR. ULSH: There was active work going on --

MEMBER SCHOFIELD: You're getting in too far.

MEMBER ZIEMER: John, we understand your point so --

DR. MAURO:. You understand my point --

MEMBER ZIEMER: Yes.

DR. MAURO:. Okay.

MEMBER ZIEMER: I don't think we need to discuss it further.

MR. STIVER: John, we might want to get you set up for a Q Clearance.

(Laughter.)

CHAIR BEACH: And one of the action items that SC&A had was to deliver the

interview notes, which Joe just handed to Jim and so -- glanced at them.

Joe will make copies of them at lunchtime.

MR. FITZGERALD: I'll make copies.

CHAIR BEACH: So that's then. At this time is there anything else on tritium, tritides, and if not we'll go to lunch?

(No response.)

So let's break for an hour.

MR. KATZ: So we'll be back around quarter after one. Thank you everyone on the line.

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

A-F-T-E-R-N-O-0-N S-E-S-S-I-O-N

1:16 p.m.

MR. KATZ: This is the Advisory Board on Radiation and Worker Health, Mound Work Group. We are just reconvening after a lunch break and we are ready to get started.

CHAIR BEACH: Okay, so are we completely finished up with the last issue of tritides or did anybody have any lingering thoughts that they thought about during lunch?

(No response.)

No, okay. So our next discussion will be on adequacy, completeness of internal dosimetry and again, this paper that we got, SC&A delivered a White Paper, and I don't have the dates with me.

NIOSH came back with 111 data points and NIOSH, or SC&A is not prepared to close that out and just may do some discussion and clarifying questions again.

And NIOSH, would you like to start, Brant?

DR. ULSH: I can.

CHAIR BEACH: Okay, that would be great.

DR. ULSH: It seems like we are left with the issues that have been ongoing for, I don't know, years maybe, and this is certainly one of those.

We've talked about this a number of times in the intro to our report that we put out dated August of this year. I cover all the iterations that we have had on this issue.

And basically we focused at this point on exposure to exotics and by exotics we are talking about, at Mound at least, radionuclides other than the main ones that they had there, which were plutonium, polonium and tritium, so anything else, at least in the Mound context, we would call an exotic. It's kind of a loose term.

SC&A has expressed a concern that there were situations where workers had an

exposure potential to some of these exotic radionuclides for which there is not corresponding bioassay and then they asked the follow-on question, how are we going to do dose reconstruction.

So after a lot of back and forth on this issue at the last meeting, we finally got to the situation where SC&A was going to provide some specific examples of what they were talking about, so that we could -- NIOSH could -- investigate those specific situations and determine whether or not there was an issue for -- what we described for you, where we couldn't reconstruct dosage from exotics.

SC&A did provide some specific situations in their last report, so in this report that we just issued in August, basically I took all of the specific situations that were provided and we did a number of things.

Number one, we looked at what radionuclide was involved. We looked at what

bioassay, if any, was done and we also looked at what the exposure potential was.

And we walked through every specific case that was provided and at the end of the day, NIOSH was left with the conclusion that we didn't see any examples here that would indicate, certainly not a widespread exposure potential to exotics, and I would contend that we didn't find an example that we could point to and say you know, we've got an unmonitored exposure situation here.

So our report was 79 pages long. I'd be happy to answer any specific questions. I'm sure Joe's probably got some thoughts to offer on this, but that's truly kind of the long and short of it.

CHAIR BEACH: Okay, thanks.

MR. FITZGERALD: Yes, I -- we are fairly far along, at least I am fairly far along in going through this. And these issues are not new issues so I think we will have something relatively soon, but I can't give

you a specific date. I think this is -- but I wanted to walk through this, particularly for the people on the phone, just you know, it is a lengthy history, I agree with Brant, and so we have gone through a number of steps.

So I have kind of outlined some of them. The issue began as separate deliberations on specific radionuclides -- exposure potential to exotic radionuclides.

Okay, issue one from -- and this derived from the Site Profile carried forward into the SEC discussion -- was actinium and thorium after the initial SEC period.

Issue two was -- I think that was radon, actually. Issue three was the transuraniums other than plutonium, so americium-241, curium, neptunium.

Issue four was the various uranium isotopes. Issue five was isotopes of Pu other than the weapon 239, 238. And then issue seven was fission activation products.

And then we had issue eight, which

was sort of other radionuclides, exotics, beyond some of these others, and that was essentially what we started out with, is -- and I think, again, the -- and this is going back a couple of years, but the position I think that NIOSH presented to us on some of those issues in the initial discussions that you know, while some of these exotics were handled in some quantities in the early '60s, pretty much in general with more bench scale in the later years and '70s and '80s and I think that's kind of what the response was.

The second issue that arose early on was the so-called King report in terms of you know, what the actual intent and use of that report was, and was it in fact a roadmap for D&D or not, and I think the NIOSH position was it didn't necessarily connote an exposure potential by itself, that it required you know, a corroboration via the quantities involved and the dosimetric significance involved.

So there was other additional information that was needed and not just simply a listing in the King report.

And I think a third aspect of that discussion was that you know , there were some concerns about the historic use of gross alpha and whether or not that could distinguish some of the byproduct alpha, source nuclides that were involved and whether those were masked by the process or not.

And that's kind of where all this sort of started. And we had other issues which I'll get to, that sort of dealt with the classic data completeness and adequacy.

We initiated that as a separate issues. And in the end I think a lot of these issues kind of blended so the Work Group chose to go ahead and make it one consolidated issue dealing with the internal dose reconstructability.

But after we got through that iteration, I think NIOSH introduced what has

been called or labeled the roadmap as a response to at least these airway issues and what it was trying to do was match the radionuclides to location, time and bioassay availability, a sort of matrix.

And what became clear and what was made clear was that based on the King and Meyer reports, and it spoke to available bioassay procedures, and not necessarily that they were employed under all applicable exposure conditions.

So you know I think there was a lot of parsing outs to figure out what the matrix really provided and what it didn't provide, and I think what it provides is a pretty good graphic representation of the King and Meyer documents in terms of where source terms existed over time, location, what have you, but not necessarily whether or not there would have been an exposure potential or a need for bioassay during those particular time frames and locations and I think that was

something that came out of the discussions.

And I think, as Brant pointed out, there was some debate over that interpretation because the terminology used in the King report on usage and some of the other phraseology I thought was rather ambiguous on that point.

And there were subsequent interviews that were done that I'm not sure necessarily clarified everything, but certainly suggested that there was a viable point to be made that the context of the document might have been more in line of pointing out source terms rather than pointing out exposure potential.

So you know, looking back over this long litany I think it's a little ambiguous exactly how in the end the King report was being applied, but again this is just a document, I don't disagree -- I don't think we disagree that corroboration of some sort would seem to be necessary if you are

dealing with something as consequential as determining an SEC Class.

Beyond that, we have had some exchanges on data completeness and adequacy which is sort of a side issue which dealt with the alpha and beta, gross alpha-beta, analytic techniques and whether or not they adequately address the secondary nuclides and whether or not they were masked and I think all that process and we went to some lengths to find people who would have been perhaps expert on those processes, and I thought it was surprising at least from our standpoint, we didn't find people that really had -- were contemporary enough or really could walk through those enough and we did make some contacts.

So I think that was left without a firm conclusion as to whether or not there were some issues and I think NIOSH presented some reasonable arguments about the fact that one could rely on and in fact were relied upon

in others -- at other sites.

So in general I think it kind of was left, I thought it was resolved that we didn't have any lingering issues on gross alpha and beta as far as the analytic side of that goes.

Now, that's a quick history over about two and a half years. We get to the final point, and you know, we sort of got into a final questioning of the King report roadmap that I think at the Work Group meetings early last year it was pretty clear to me that it had evolved into a more qualitative, very subjective discussion of what the King report did or didn't do, and whether exposure potential, really, may have been there or may not have been there. We weren't making much progress.

I think it was my suggestion to the Work Group that you know, listen, just to bring this to a close, if we can't come up with specific examples of exposure potential

that would demonstrate that it's less subjective, then I think it's not compelling enough, and that was the genesis of -- and we didn't have any a priori sense of whether or not there were a lot of specific examples but we felt that we needed to look for those.

And that was the genesis of the June 2010 White Paper that we would try to highlight what we could in terms of specific examples and we have since now got a NIOSH response to that.

Now, to bring that up to speed, I do have some questions, clarifying questions, on the response, Brant, and just to help me understand where you are coming from, as I indicated you know, yes, on the King report I think that isn't something that I find compelling from the standpoint that I would argue -- I wouldn't argue that you would need some corroborating information in order to apply it. It's not enough by itself.

I think there's a lot of ambiguity

about how it's framed and how some people have said it was implemented but I think there was enough of that that I would not see that as being a whole point.

I would recommend to the Work Group that, as far as that goes, I think we accept the fact that some degree of corroboration seems to be necessary in order to apply what information is in the King report, and I think that's actually a pretty major leap for us.

But I -- looking at this thing I think that's kind of where I am at at this stage. I think that's a reasonable approach.

The second point I get from the response is -- there's 111 of them, I have to say, it was many, many days in front of various football games that I have gone through these thing, all 111, and tried to frame up all the responses in terms of what kind of categories of responses.

And one category of response that

gives me some pause, there seems to be some reliance on a programmatic basis, meaning that sort of reliance on the program performance, and I'll give you some examples.

You know certainly you continue to point to Meyer's bioassay history in terms of the procedures that were in that document. There's a reiteration of Mound laboratory incident findings.

You know, you have an incident at a typical DOE site and you get a -- I don't want to call it boilerplate but it sort of sounds like a boilerplate response where they say the incident did not result in any injuries, radiation exposure to personnel or loss of equipment.

You get that same -- over time. And there was another response, just another example I found in the -- and these were repeated over a number of these, that you have faith in the researcher, supervisor or bioassays in making the correct calls in terms

of communicating the need for monitoring, that kind of thing.

The only thing I would say is I -- you know, we have done this at other sites. It's -- certainly it's helpful to have some faith and confidence in the early performance of the programs but I think, I always hesitate because I think the reason the program was inaugurated was some of these programs, even though they were staffed with expert HPs and were managed well, they didn't always make the right call.

So I'm a little concerned about using a programmatic basis as a reason for the exposure being handled correctly, and I'll just use that in a general way.

And then sort of turning it back to say well it's up to you to prove otherwise, well, you know, I can't accept necessarily that the program did the right thing at face value either, and recommend to the Work Group to accept it at face value.

So this is just a -- we have only had this for a little while, but just a reaction to some of those responses that a programmatic basis for again, claiming that the exposure potential was addressed or did not exist I think is a problem from our standpoint.

That doesn't apply to all of them. It only applied to, like I said, I came up with a matrix just trying to figure out which ones had that kind of a response but that gives me some pause.

And that doesn't impugn the expertise and credibility of Mound's HP community. It's just I think it's the reality of some of the historic practices at the sites.

Now the second thing, one standard response was you are talking about the primaries and not the exotics. I mean that was sort of a, what are you doing, the Work Group didn't ask you about you know, the

poloniums and the what have you, Pu-238s. You are off-scope.

And actually, the original document had a -- I actually jotted the page number -- had a -- oh page 13 of our response pointed out that there was a section in the White Paper that indicated that we are looking at radiological controls, the integrity and performance of radiological controls in general, and for that section, we were pointing out that the loss of control, even for primaries, would have some implications, understandably for the secondaries and I wanted to draw that parallel.

So you know, I think you sort of sliced the issues down to very specific issues but I think that that qualifier got lost in the shuffle, that we certainly understood what the Work Group was asking in terms of exotics but wanted to at least draw that parallel that for loss of radiological control, it would be useful just to point at some of the instances

where that happened in a significant way for the primaries and we did so, and page 13 gives you that background before we got into that discussion.

So somehow that got lost in the context of the response to those issues. And there was a number of them that had that one response that you were off-message in terms of even thinking about primaries versus exotics.

There was another thing. I'm going to just throw these out because again, we are in the midst of this and I think it would be helpful to just give you some of the sense of what we are reading.

You note that instances cited by SC&A with event-driven bioassays, in other words that resulted in an event-driven bioassays were not examples of, quote, unmonitored exposure.

But I guess my question is, we are looking at examples that are suggestive of an exposure potential and certainly we understand

that these instances in most cases are cases where they are not unmonitored, they did have event bioassays, so prima facie, they did have a bioassay after the incident.

That wasn't the issue. I think the example was to illustrate that there were in fact instances where the radiological control was lost in that particular situation and resulted in a release and, yes, there was a bioassay because that release was recognized.

But it demonstrated the potential for that particular nuclide to be released and then the question becomes, well, did they in fact report all incidences or in fact, only the -- this is the case, a lot of sites, only the ones that rose to a certain level of significance or not, and I think those examples were just to illustrate that there was this loss of control.

So it's not so much unmonitored exposure, it was whether or not they more

importantly showed an exposure potential by virtue of these -- an example, failure to rad -control to preclude worker exposure in those instances.

And then some of the things I sort of picked up in the responses, certainly in several of the responses but specifically response number 64, you seem to agree with SC&A's contention in its June 10th, 2010 White Paper that the existing -- and again, I am not sure how to address this very well because it does have to do with actinium and thorium and radium, saying that the conditions for the current Class, one could argue, existed eight or nine months before, and I don't know where to take that except that, yes, I think there seems to be some convergence on the fact that that is the case, and I wouldn't use this vehicle to raise it but I guess I -- that would be a question for you and Jim as to what happens to that particular point and the Work Group certainly needs to at least be aware of

that particular point in terms of that -- whether the additional nine months or eight months, whatever it is, should be considered.

CHAIR BEACH: I believe that has come up in previous Work Group meetings.

MR. FITZGERALD: It has come up.

CHAIR BEACH: But it's never been --

MR. FITZGERALD: This has been I think - it looks like it's -- we are converging. I'm not sure what it takes to go to the next step. I just sort of am mentioning that I saw that in a couple of the responses.

And then there's, again, excuse this stream of consciousness, but going through the report at this point, there's another one where you point that SC&A is addressing issues that are already covered by existing SEC Classes. You know I think this has come up before. Maybe counsel can help. But I think the fact that an issue is already

covered in a current SEC Class doesn't preclude pursuing another SEC issue that might involve workers from that period.

I thought that came up in a different context and I remember somebody pointing out that you know, yes, I mean, you shouldn't use an existing SEC Class to preclude pursuing an issue that might in fact go into that time period. But I can't remember the exact context.

CHAIR BEACH: That was tritium.

MR. FITZGERALD: Is that tritium?

CHAIR BEACH: Yes, because the radon Class had existed and tritium overlapped.

It was a brief discussion of -- yes, last year.

MS. LIN: I don't think that would be a legal issue.

DR. NETON: No, it's not a legal issue, it's -- I think Ted pointed out earlier, every instance of reconstruction

should be based on its merits.

CHAIR BEACH: And not whether --

MR. FITZGERALD: And not made moot by an existing Class.

DR. NETON: No, I mean it is sometimes -- there's a tendency to point that out in the sense that, well, then you leave no recourse for that. But technically there is no --

MR. KATZ: Right, I think the only other nuance or element to that discussion was that if you have a Class that covers everyone who worked with tritium already and then you have another issue and it's fully enveloped within that Class, the Board can't recommend another Class that's a subset of a Class that already exists because it --

MR. FITZGERALD: Yes, it's the uranium --

MR. KATZ: Right. So there's no -- - maybe that is the context but --

MR. FITZGERALD: Yes, okay. But

that was -- some of the responses spoke to that and I thought that was where it came out so I wasn't sure whether -- well, I remembered that that actually seemed to be certainly justified but it seemed like it was a concern that we were doing that.

The other issue, it was a question on thorium-232 when it was used as a substitute for Pu-238 in R&D analytic programs and this is the '60s to '80, and that was -- I would put a space holder in there that you all indicated that you were investigating a thorium issue, and the Work Group might want to understand, if you can, what that means because it didn't really say too much more about it as far as the status of that.

And that's again, pretty much an outline of, at least at this stage, the takeaway. We are working on a response but those are some of the, I guess, reactions to the responses and certainly a pretty comprehensive, 111 specific issues so it takes

a little while to sort of get your arms around them all.

But you know, I think it was a reasonable analysis on the specific examples that were provided, and we will certainly try to come back with a response.

DR. ULSH: I have got some thoughts to offer Josie, if now is the appropriate time.

CHAIR BEACH: Yes, that would be great.

DR. ULSH: I took some notes, as you were talking there, Joe, and I captured six points anyway. So I'd like to walk through and offer some responses on that.

The first one that you raised was the interpretation of incident reports and in particular you characterize it as boilerplate language.

The reason that I thought it was important to include those is that it was my understanding that SC&A was going to provide

examples of situations where there was a potential for unmonitored exposure to exotics.

So I looked at each incident that was provided, that was cited by SC&A as an example. And so number one, was it an exotic radionuclide, and that's another point that you raise and I'll talk about later. Number two, was it unmonitored, because if these incident reports are being offered in support of the case that, hey, here's a situation, we are having unmonitored exposure, I think it's legitimate to point out in those situations, based on the reports that were cited, if they said there is no radionuclide exposure, I think that's an important point to know, because I would say that that's not an example of an unmonitored exposure to exotics.

Now granted, if that was the only thing that I offered, just this boilerplate language, you know you could take it for what it's worth.

But it was kind of a weight of

evidence approach, that number one, you are citing this report as an example of an unmonitored exposure when the report itself says there was no exposure.

I went on to look whether or not it was monitored, whether it was bioassay, et cetera, but I thought it was a -- it's important to represent those cited reports accurately and that was in there, so that's why I cited it.

MR. FITZGERALD: Well, before you leave the first point, I think there seems to be, and I want to clarify this for our response, a distinction between unmonitored exposure, which I think in terms of the instances that were in fact reported, clearly the site responded and did, eventually, a bioassay.

Of course you would have to, if you had a formally notified incident, you would have to respond and do your subsequent bioassays.

I think the original analysis tried to demonstrate that for the nuclides in question, you obviously had a breakdown of some sort and had an exposure and this was indicative of an exposure potential.

Now, you know, the discussion of whether that represented or was emblematic or an example of an exposure potential is the issue I think we are trying to drive at. Whether there was unmonitored exposure, I don't think there's any question. Of course it was -- if they had bioassays it wasn't an unmonitored exposure.

So I think the whole thing was driven by trying to come up with instances where you could show for the nuclides in question there was an exposure potential. These instances did occur, and in that context, I think what I am saying is that the only thing that gives me some pause in the response is I am uneasy about the sort of the blanket statement that the sites tend to do on

some of these that you know, ding ding ding ding, no exposure, none of this, none of that.

And I understand that's all you have to work with. I am just pointing out that would be -- that would not answer my question about the exposure potential.

But it would answer my question about the fact that it was in fact bioassay-monitored after the fact, and so it wasn't unmonitored exposure necessarily.

But it shows exposure potential, and I think that's kind of one of the things I've noticed in the give and take is that we may be talking past it a little bit, that the task which I recommended to the Work Group that we took on, was is there any way you can actually get your arms around exposure potential by looking at the operational history and looking at history reports and what have you.

And it's very difficult but what you have to work with, frankly, is the

historic record of what incidences occurred, where you had breakdowns and what have you.

They weren't reported. There's no history. So it's either interviews or incident reports, which primarily make up your basis for pointing at breakdowns and whether or not these particular source terms can get out and be exposed -- workers could be exposed.

So really I think the point there is that we are not arguing unmonitored exposure, but we are trying to say these were provided in the context of the exposure potential, that in fact the workers could have been and in fact were exposed in some cases and I am not sure I would write it off because the site wrote it off in the '50s or '60s as, you know, we didn't see any exposure, because I think in some cases that might have been a pretty standard answer back in the day.

DR. ULSH: Well that leads to the second point that I heard you make, and that

was primaries versus exotics and radiological controls.

And the reason that you gave in your White Paper for citing these instances -- incidents, many of which, I think most of which involve primary radionuclides, was to demonstrate a general loss of radiological controls.

And I think you said that that kind of got lost. I didn't lose it. It's at the bottom of page 13 of our report.

I clipped out the text from SC&A's report that talks exactly about that, why they cited these reports, and it's as Joe said, demonstrate weaknesses in general radiological controls, and I responded to that on page 14, so it didn't get lost. It's in there.

And my problem with this approach is that the logic seems to be that SC&A went to great pains to point out at that incidents happened and people were exposed. We have never said otherwise. We will posit that

incidents happened and people were exposed in situations, well, with these general -- with these primary radionuclides.

The problem is SC&A appears to then be extrapolating and saying, see, because these incidents happened and people were exposed to these primary radionuclides, then incidents must have happened or there must have been exposures to these other exotic radionuclides.

Well okay, fair enough. If you are going to extrapolate that way, then I think it's fair to extrapolate that, when these incidents happened, exposures were monitored, bioassay was performed; why wouldn't they then do that with the exotics?

MR. FITZGERALD: That was my point.

DR. ULSH: Well again, I don't think that came across in the individual you know -- the individual responses basically tactically, not generally, tactically address

and say this was a primary not exotic, that's the way the specific response was written.

I'm just saying that the context of that response -- the context of the issue is exactly the way we put it at the beginning, and you responded generically at the bottom of page 13 in the report but you know, you go through like 20 specific responses that basically say this is a primary not an exotic, have you lost your mind type of thing. I'm just saying --

MR. FITZGERALD: I don't think I --

DR. ULSH: I'm just saying --

(Simultaneous speaking.)

MR. FITZGERALD: Listen, you know, I could come up with a generic response, no, I mean we kind of explain why we are doing it, you can argue that, but as I was reflecting on the report, I said well, you know, I think it's understood why those were raised and there may be some real legitimate differences

on that point. But I'm just sort of advertising when we get into this thing that we are not going to argue each and every one of these responses because clearly you know where we are coming from and you may differ from it generally, but we didn't miss the mark. We purposely wanted to raise those. So --

And that was quite a few, like I said I went through this matrix, and I said well okay, I understand why there's this difference, but it does make for a lot of specific disagreements when in fact, I think it was just a general misunderstanding, perhaps.

DR. ULSH: So I will posit, on the record, we agree that incidents happened, and there were exposure potentials, certainly over the course of Mound, certainly with plutonium, polonium, and I won't even say -- I'm not trying to say that there are zero incidents that occurred with exotic radionuclides.

What I'm saying is, based on the evidence that has been provided, it appears that, when those exposures happened, Mound performed bioassay.

That's what the evidence shows here.

MR. FITZGERALD: And I think -- I don't think we disagree.

DR. ULSH: Okay.

MR. FITZGERALD: I think this give and take -- you know this was something that wasn't clear to me when I proposed this a year ago, you know, we would go and look at these things and see whether or not -- again, not so much whether it was unmonitored exposure but whether or not these would suggest an exposure potential that may have been missed for these specific nuclides and I think two things came out of the analysis, one of which is what you just said. Basically for every incident you could demonstrate that they did have an event-driven bioassay and follow-up that was

adequate apparently, and in terms of exposure potential, you know I think, as you said also, it's clear it was an exposure potential but it was addressed with the event-driven bioassay.

And that's about as far as you can take it with the record. So I don't think we have any disagreement there.

DR. ULSH: Okay. Well let's move on to another one where we don't have a disagreement. You mentioned the radium, actinium, thorium and the time frame February through September to '49. Oh here it is, yes, comment 64.

Kathy raised this issue, pointed out this gap, a long time ago. To kind of set the stage for it, we have an SEC for Monsanto which was the predecessor for Mound that goes up through, oh gosh, I'm going to say it wrong if I say it specifically, I think it goes up to 1949.

We designated the radon -- sorry, radium, actinium, thorium Class from February,

sorry, from September 30th 1949 up through 1959.

The reason we picked that start date was because that was when the material involved arrived at the Mound site so that's why we picked that particular start time.

Kathy has pointed out that there was a gap between the end of the Monsanto SEC and the beginning of the Mound SEC, and at the time, I thought that was a good observation and I thought that we might want to expand either the Monsanto Class or the Mound Class to cover that gap, and I still think that.

With regards to procedurally how we go forward, I don't know, my thought was, let's wait until the dust settles and there will probably be a list of things that we want to address.

But I think that certainly this is one of them. I wouldn't argue that there should be a gap. I mean, that's how it came about, but now that Kathy has pointed out that

there is a gap, I think we need to address that.

CHAIR BEACH: I guess I wonder why you'd wait for the dust to settle. If you've seen it and you know it exists why not 83.14 and move forward.

DR. ULSH: We could, well I assume we could. That's for Ted and Jim to say. But I think we could do that. It would be cleaner just to do one big one and kind of cover all the bases but I don't know --

MR. KATZ: One big -- it depends if you have other --

DR. ULSH: Right exactly, let's say at the end of the day you have got three or four issues where you think the SEC needs to be expanded, well, wouldn't it just be easier just to cover that all at once?

MR. KATZ: If they are independent of each other then I don't think that's necessarily -- they are independent Classes, I don't think so. Then you could go ahead and

do this. But if they overlap or intermingle somehow, that would be different.

DR. NETON: This is -- I agree. This is something that we need to take up independently and we are looking at it. This is also sort of coincidental with a redefinition of the Mound site at this time by Department of Labor or Energy.

I believe -- I hope I'm not getting this wrong -- but I believe it's changed -- reverting to a DOE site at some point in earlier years now. There's some movement going on about some redesignation.

MEMBER ZIEMER: Because of what?

DR. NETON: Well, proprietary ownership I think, though I might not -- I may be misremembering.

DR. ULSH: Mound site.

DR. NETON: Not the Mound, maybe the Monsanto; I don't know. I need to -- there's some movement with this early time period right now. I am not clear on it so

just take that for what it's worth.

But I think that I do agree that this is something that we need to take up ourselves, an independent effort, maybe outside of this discussion.

DR. ULSH: Okay, so there are some procedural questions about how to move forward, but I think on this particular sub-issue we are in agreement that somehow or other, that gap should be closed.

In terms of existing SEC classes and issues that are entirely enveloped, I'm not necessarily arguing that that's a legitimate basis for dropping an issue, but I do know that I want the Working Group and the Advisory Board to be informed about what the outcome would be.

So for instance, just to give you an example that's not from this report, the neutrons issue that we talked about earlier, where I said look, this is not going to result in the addition of anyone to the Class. That

doesn't mean it's not a legitimate issue or it is a legitimate issue. It's just when you think about, you know, what's the effect going to be.

And you know you could choose not to consider that, or if the law doesn't allow you to consider that, fine. But --

MR. FITZGERALD: I mean I'll accept, certainly I think it's what Jim said earlier and what you are saying now, is a piece of additional information or perspective and that's all.

DR. ULSH: Yes, exactly.

MR. FITZGERALD: I -- some cases, and I read the response, was saying I don't think that's a message to us not to go there, it's just sort of an additional perspective just to be aware of.

DR. ULSH: And the last issue was thorium-232. The reason I went ahead and issued this report was because it's already 79 pages and I didn't want to hold it up while we

have internal discussions about how to handle the thorium issue.

So at the time that I issued this, that was and still is an outstanding issue, how to handle thorium-232. At Mound largely this is a question of the gazillion oxides and oxalates -- the residues that Mound received in the '50s in advance of an anticipated pilot program to process that into fuel for the breeder reactor program.

Basically Mound received all this stuff, about 1,000 drums of it or so, in 1955 and then --

CHAIR BEACH: That was the stuff they were continually re-drumming. Correct?

DR. ULSH: Yes. They received it in I think the winter of '54, '55, and shortly after that, I think that summer, the pilot program was cancelled. So there was Mound sitting there with all these drums of stuff, and they didn't have anything to do with it.

And as Josie said, over the next

10 or so years, the drums deteriorated because they were stored outside and they had to be repackaged a couple of times.

And then finally they were emptied into building 21 and stored there until they were removed from the site in 1975.

So anyway you have got this rather large collection of thorium residues and Jim and I have been talking and some of the other members of the ORAU team have been talking about how we handle thorium dose reconstruction. We haven't come to a conclusion yet. We are still talking about it. I would present it as an outstanding issue. But geez, if that was the only one left out of these 79 pages I think that would be a monumental step forward.

I will point out that back in the 1990s, early 2000 period, MJW -- part of the ORAU team -- but separately from that, even before this program started, MJW did a reconstruction for Mound workers, dose

reconstruction for Mound workers, and they were able to reconstruct thorium dose for Mound. We might take a look at that and decide that it's not appropriate for what we do or we might say it's okay, I don't know, we are just not there yet.

So I would characterize that as an outstanding issue.

CHAIR BEACH: Any idea when you will have some formal response?

DR. ULSH: How much work are you willing to do on others?

CHAIR BEACH: Well I think this is our last item, so you have already got your work.

MEMBER SCHOFIELD: Just one question for you, Brant, in the documentation they are looking to, do you know if, after the incidents, it sounds like they might have actually had a fairly good program -- what the levels or what the drivers were for reportable incidents where they did bioassay and did the

-- were the decon crews under a bioassay program?

MR. FITZGERALD: What would the trigger be an event-driven bioassay? I don't know that I can give you an exhaustive list, but certainly, if the air monitors alarmed during a job, that would be a trigger. If they took nasal swabs and those came up positive, that would certainly be a trigger.

In general, these folks are going to be on a routine bioassay program. The incident bioassay is going to be layered on top of that because you are going to want to get a result quicker than you might get with a routine bioassay program.

So I would say those are some of the precipitating events. Jim, I don't know if you have --

DR. NETON: Yes, I guess I think when you pose the question more in the realm of the exotics where they might have not had a routine program, but I think the same trigger

criteria would be in place, and that is -- the discovery of contamination outside of where you would expect it to be. I mean, someone would detect contamination outside of the hood where they were working with it or something to that effect.

But I don't know in this earlier time period that there were formal criteria like there are now. That's certainly true.

DR. ULSH: I don't know. I would have to go back and look.

MEMBER CLAWSON: I guess I need to jump back to the very first one that I wanted, because I thought when we got into this, you showed me an example where they had the potential for exposure, because I know in the earlier years, these exotics, they really weren't looking for, and I believe SC&A did just what the Work Group says, we'll show you examples of where there were releases.

I don't think that they were monitoring for the exotics because if you had

uranium, plutonium, you would probably have some of the other stuff, because that's what they were working for.

And I think the point that SC&A was trying to make and that I agreed with was we wanted to be able to show that there were releases, unmonitored, monitored or whatever, the potential for releases and the potential for these exotics are there.

Now if we don't have the information, if we didn't monitor for those exotics, that in itself is an issue.

DR. NETON: I tend to agree with you, Brad. I think the question is, were there potentials for routine releases such that a routine bioassay program was necessary.

You know, and I think -- one can demonstrate -- this sort of goes along the line of what Joe and I had talked about a year or two ago at the Board meeting that you know, because exotics were there, you need to demonstrate that there was enough potential

there for them routinely to be dispersed in the workplace where you would have to be on like an upper routine frequency and I don't know that this really answers the question, that they were monitored, there was -- I agree that it demonstrates a potential for exposure.

But I think at some point, we also are trying to describe what those potentials were on a more routine basis. I mean it's possible they could have had some experiment ongoing that was not routine where things kind of went awry, but if for instance, I don't know what, pick a nuclide, curium or something like that, if they had a very small quantity, it was confined to hoods, they didn't do anything outside of wet chemistry experiments with it, I would argue that one doesn't need a routine bioassay program for something of that nature. That's -- you need -- I agree that we need to describe that, those conditions, to some degree.

DR. ULSH: And I think we have in

here.

DR. NETON: You see that's where -- we haven't heard that discussion yet, about the potential outside of these sort of incidents that might have occurred.

MR. FITZGERALD: Well I think the -- we went to the instances, the examples because we were having a sort of qualitative discussion about what the program of control was for exotics and it wasn't getting us very far because it was like proving a negative, it was sort of like you know, how do you know you have a substantial or lengthy enough program that involves exposure potential such that you have a routine program or not, and since there wasn't any bioassay data being collected, we didn't have routine programs, so you are trying to find if that were --

DR. NETON: Well yes.

DR. ULSH: You are trying to figure out okay, if it wasn't anything there, was that because there was no need for one or

because they neglected to do it when they should have done it, if you can see where I am going with it.

DR. NETON: It's a chicken or egg kind of thing.

DR. ULSH: Chicken or egg so okay, we went back and forth on that for almost a year, and finally said let's look for instances where it's pretty clear that there was an exposure potential but there was no routine program in place and there should have been, and quite frankly, it was the last straw, there was no other -- I couldn't think of any other way to really get a handle on that particular question so --

MR. KATZ: So wouldn't you have program information that would say they were doing X, Y, Z in this building?

MR. FITZGERALD: We did. You had the Meyer report, you had procedures and stuff like that.

MR. KATZ: So if you know that

they were doing X, Y, Z in this building with this radionuclide, this radioactive material whatever, and you also can show that there was no monitoring, that would be an instance right, that you were looking for.

MR. FITZGERALD: No, because we had -- here's the dilemma, is that -- this is why we spent so much time on the King report. We were looking for some documentation that would define an operational activity other than bench scale by time and location such that you know there was a program that has a source term that one could say it should have been routinely bioassayed.

But I think we did get hung up on the King report in the sense that it wasn't clear the fact that that did provide that information.

And there were certainly procedures in the Meyer's report that says you know they did have techniques and did these kinds of things, but then the question became

did they actually apply them and use them in instances where you had an actual activity that would have entailed not just an events-driven thing which would have been maybe a small bench scale operation but something a little more extensive.

DR. NETON: But then I think that gets into the routine alpha monitoring program and what they were really measuring with the urine samples, right?

DR. ULSH: The first part of SC&A's report was talking about specific incidents. The second part of SC&A's report talked about specifics, what they termed programs, so for instance the Cotter concentrate activities, the activities with uranium, the ionium program.

That was in SC&A's report and we responded to that. We have shown where Meyer talked about here's the bioassay techniques that were available, and we have talked about what bioassay was taken. So that's covered in

here. We do have specific situations like that.

MEMBER ZIEMER: Were they working with the work permit process in those programs?

MR. FITZGERALD: Not in --

DR. ULSH: I can tell you that they were in later days but I don't know when they started.

(Simultaneous speaking.)

MR. FITZGERALD: Not in the earlier years but --

MEMBER SCHOFIELD: You did what you wanted.

MEMBER CLAWSON: It's the same as all the other sites, about 1985, you start seeing the difference.

MR. FITZGERALD: But you know, not putting too fine a point on it, I think you know everybody did due diligence on the issue, to answer your question, and I certainly at this stage wouldn't advise the Work Group that

we have found a salient enough example sorry, but -- I'm not advertising -- of exposure potential that would have required you know, a routine bioassay.

Now, I didn't have that pre-judgement going into this. I think that had to be tested and that's what we wanted to do, and looking at both the examples that Kathy came up with, and the responses, I am not that far apart from Brant in the sense that you know, I still have some questions and some concerns, but overall, I don't think there's anything that's glaring that suggests that we missed something.

MR. KATZ: That's all I was reflecting --

MR. FITZGERALD: But this is such a convoluted thing because you are trying to prove -- you are trying to actually validate something and there's a, you know --

MR. KATZ: But we have had that other side, we have definitely come across

these situations where there was a whole process and then --

MR. FITZGERALD: I think what skewed this thing is that we had this wonderful, I think we had this wonderful King report that, for once, somebody historically went back and mapped everything and so you had place, location, time, nuclides, available bioassay, and sort of like end of story, and then when you compared that against the actual bioassays that were taken, you say, well, wait a minute.

And I think that kind of threw things off for a bit and then we realized that that wasn't necessarily going to deliver the goods and then you had to go back and say, well, what can you do beyond that.

And I think this is about all you can do and so you know, we will write this up but that's kind of where I'm -- I think where we come out at this point.

CHAIR BEACH: So out of this we

have SC&A's response due to NIOSH's White Paper and for NIOSH, the action items are to complete that thorium-232 report and I think that the Work Group would like to track that issue about framing up that time frame from February 1st '49 to September 30th '49. That did come out of this Work Group, so we would like to follow that through.

DR. NETON: I'll take that as an action item and follow up with our folks internally.

CHAIR BEACH: So really where we are is -- what I'd like to know is if we can get our secure meeting in mid-January, a Work Group scheduled at the end of January, and report out -- or the 1st of February at our next Board meeting, and be finished with Mound by the end of February.

MR. KATZ: Yes, that's when the Board meeting is. We should give SC&A enough time following the secure meeting, since there are some questions that have a bearing on --

MR. FITZGERALD: Well we have to go through DOE clearance ===

MR. KATZ: And that itself is another --

CHAIR BEACH: We need to push for that secure meeting as --

MR. KATZ: So I think relatively early in January if it's possible would be better if you are trying to make an end of February Board meeting. I think it's sounding a little bit tight.

MR. FITZGERALD: Well, the meeting in Germantown can be done fairly readily. I mean I think we can get that arranged and I think it's just the timing of how that feeds into our final response but we surely can move to make that earlier rather than later in January.

CHAIR BEACH: Well I'd say the first week of January, 1st to 2nd. Or the second.

MR. KATZ: First week is tough for

people in terms of --

CHAIR BEACH: Oh, what's the --

(Simultaneous speaking.)

MR. KATZ: Well actually this year it's isn't because December, it comes at the end of a pay period or whatever, there is no January use or lose --

CHAIR BEACH: No.

(Simultaneous speaking.)

CHAIR BEACH: So I'm thinking end of the first week, beginning of the second week.

MR. KATZ: Do you want to look at the calender --

CHAIR BEACH: Yes.

MR. KATZ: Because do you want to send something to Greg soon to sort of set this up?

MR. FITZGERALD: We can do that.

MEMBER ZIEMER: I think I'll be through the DOE process by then.

MR. KATZ: Yes, I hope so.

MEMBER ZIEMER: All my stuff's been in for quite a while.

MR. FITZGERALD: Tritides takes a while for some reason up there.

MR. KATZ: No no, Paul has his clearance.

(Simultaneous speaking.)

DR. ULSH: The second week is not great for me. There is a Procedures Subcommittee meeting on January 9th.

CHAIR BEACH: How does the 5th/6th look?

MR. FITZGERALD: Fifth or sixth?

CHAIR BEACH: Yes.

MEMBER CLAWSON: I'm just getting back from Hawaii.

MR. FITZGERALD: The sympathy is overwhelming.

MEMBER CLAWSON: I can tell that.

MR. KATZ: When do you get back Brad?

MEMBER CLAWSON: I get back on the

4th.

MR. KATZ: That's a long flight.

DR. NETON: You can just fly all the way back to Washington.

CHAIR BEACH: There you go.

MR. KATZ: That's a little bit cruel.

MEMBER CLAWSON: Dump my wife off on the end there.

CHAIR BEACH: Well, if the meeting is on the sixth you have got the fifth to fly.

(Laughter.)

CHAIR BEACH: What's next then? Let's see then, the week of the 9th is no good for Brant, the whole week?

DR. ULSH: Well, there's the Procedures meeting on Monday that -- I'm supposed to go to Savannah River the rest of that week but --

CHAIR BEACH: Yes.

MR. KATZ: Okay, but then that's pushing everything for --

CHAIR BEACH: It's -- that's why I'm saying if Brad can agree to do the 6th --

MEMBER CLAWSON: You know what, bottom line is you guys go look for fast --

CHAIR BEACH: You should be rested up.

MEMBER CLAWSON: I would go for the 5th or 6th and --

CHAIR BEACH: I understand that if we wait until the 16th then SC&A is not going to --

MEMBER CLAWSON: I understand --

MR. KATZ: Why don't we at least do the 6th, which makes it at least possible theoretically that you could make it, but whether you want to do that to yourself is a separate question.

MEMBER CLAWSON: Well, yes, I've got some other things on the plate there, so what I would do is I would set up on the 6th and we'll shoot for that and go from there.

CHAIR BEACH: What's a second date

in case that doesn't work? Is there any flex in your Savannah River or would we have to go clear to the --

DR. ULSH: Well, the third week.

(Simultaneous speaking.)

MEMBER ZIEMER: Well the Procedures Subcommittee, but I would think if worse came to worst we could move that one Ted.

MR. KATZ: What date do we -- we have that for the --

MEMBER ZIEMER: I don't know there's anything pressing for Procedures.

MR. KATZ: Wait which day are you talking about?

DR. ULSH: January 9th.

CHAIR BEACH: Oh, the Procedures Subcommittee.

MR. KATZ: Oh not, but that doesn't -- oh I see. You are saying --

MEMBER ZIEMER: No I'm saying, what if Procedures could move theirs. I mean

there --

MR. KATZ: It's possible.

MEMBER ZIEMER: It's sort of a routine meeting.

MR. KATZ: They're all routine.

MEMBER ZIEMER: I mean they don't have things that are pressing like SEC.

CHAIR BEACH: Okay, well let's shoot for the 6th and check for the 9th, Ted, if that --

MR. KATZ: Okay. And 6th, 9th alternate. And this would -- let me -- I will send an email to Greg about this. This would be Board Members and who, Brant?

DR. ULSH: Probably Mel.

MR. KATZ: Mel.

DR. ULSH: Mel and Karin.

MR. KATZ: Karin. Okay and then Joe, you.

MR. FITZGERALD: Myself, John Stiver.

MS. LIN: Do you need legal

counsel there?

MR. KATZ: Probably not. But you are there in Washington, so if you want to -- it's Germantown.

MS. LIN: It would be Rob.

MR. KATZ: It would be Rob.

MS. LIN: Yes.

MR. KATZ: I don't think we need him, really, for this. I don't think there's anything very tricky about this at all.

MEMBER CLAWSON: Whenever we do it we have Isaf is --

MR. KATZ: Isaf. Greg can look at that, cover that. Okay. So I will -- anyway I will this week send Greg an email, try to set this up.

CHAIR BEACH: Do we want to try to go for our Work Group meeting?

MR. KATZ: And for that, let me just ask before we finish on that topic, they don't need any specific materials to be available for that, or they do?

MEMBER CLAWSON: The classified wing.

MR. FITZGERALD: We have classified documents already stored in Germantown that deal with this issue from our past work. I don't see adding to that collection at this point.

MR. KATZ: So those would be --

MR. FITZGERALD: They are already there.

CHAIR BEACH: You could just provide a list for what --

MR. KATZ: So Joe, you will give them a list of what you want.

MR. FITZGERALD: We'd just ask for the folder. I looked at the folder last week, it's still all there, your notes, my notes.

MR. KATZ: And you are talking about the Mound folder, the -- how do you identify that to them?

MR. FITZGERALD: It's the Mound tritides folder.

MR. KATZ: Okay. Thanks.

MR. FITZGERALD: They know what that is.

MR. KATZ: Okay. That's good to know. Okay. So I'll take care of that probably tomorrow and keep you abreast.

CHAIR BEACH: And then do we want to try and shoot for a Work Group date?

MR. KATZ: Yes so let's do that. So that --

CHAIR BEACH: How much time do you think SC&A, you -- I mean, Joe, would you need?

MR. FITZGERALD: After this meeting?

CHAIR BEACH: Well, and then we need to know --

MR. KATZ: We need clearance --

CHAIR BEACH: -- some of your items because I would like to have all the action items available, so that means --

DR. ULSH: Radon is not going to

be a problem.

CHAIR BEACH: Okay so radon should be easy.

DR. ULSH: Thorium may not be easy.

DR. NETON: I don't think so. It depends. It could be quick. It could be -- it's not going to be in between.

CHAIR BEACH: So I don't mind giving a little extra time.

MR. KATZ: Oh absolutely, we have some time to play with here, I mean the Board meeting is at the very end of February.

MR. FITZGERALD: I think we can get the tritide response in to DOE certainly in a couple of weeks after that meeting. The joker in the deck, I think, is DOE, but I think we can, with Greg, try to expedite that as much as possible knowing that we need it sooner than later and hope that will work. We don't have as much control in that. It might take a couple of weeks to get out.

MR. KATZ: So what about the week of -- I just lost my calender -- I was going to say the week of February 15th. How does that work?

DR. NETON: There is no week of February --

CHAIR BEACH: It's February 13th.

MR. KATZ: Yes, well whatever you want to call it.

CHAIR BEACH: President's Day is a holiday so we don't want to get into that. I think it's a holiday.

MR. FITZGERALD: Some time during this week.

CHAIR BEACH: Yes, the week of the 13th is fine.

DR. ULSH: It's the 20th that's President's Day.

MR. FITZGERALD: Week of February 13th.

DR. ULSH: Oh you are really going to go on Valentine's Day?

MEMBER ZIEMER: Valentine's Day, that's the --

CHAIR BEACH: Well, a week is a week. And we only need one --

(Simultaneous speaking.)

CHAIR BEACH: We can shoot for the 15th 16th, 17th.

MR. FITZGERALD: Yes, the end of that week.

DR. NETON: The 16th is better for me.

CHAIR BEACH: Let's try to stay away from Monday. And what date, does Thursday the 16th or Friday the 17th?

MR. KATZ: Friday is probably worst for you right? You'd like to get home before --

CHAIR BEACH: No I just don't want to travel on Sunday.

DR. NETON: The 16th is good for me.

CHAIR BEACH: The 16th is fine.

The 17th is fine. Sometimes I have Fridays off.

MR. FITZGERALD: The 16th would probably be the ideal.

MR. KATZ: So 16th.

CHAIR BEACH: Okay.

MR. KATZ: Okay, let's book that then. So February 16th. Here, right? Here?

MEMBER SCHOFIELD: No, actually Tampa Bay.

MR. KATZ: You'll get your Tampa thing soon enough.

MEMBER SCHOFIELD: I'm just thinking of the weather. It might be easier for us to get in and out of Florida than here.

MR. KATZ: Cincinnati is really not that brutal. I mean the airport is right there and we don't get that much real winter here.

(Simultaneous speaking.)

CHAIR BEACH: Okay so anything else?

MR. KATZ: Okay, we are adjourned. Thank you, everyone on the line for bearing with us.

(Whereupon the above-entitled matter went off the record at 2:20 p.m.)