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ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

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WORK GROUP ON BROOKHAVEN NATIONAL LABORATORY

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FRIDAY
JANUARY 21, 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
HENRY ANDERSON, Member*
BRADLEY P. CLAWSON, Member
WANDA I. MUNN, Member
GENEVIEVE S. ROESSLER, Member*

ALSO PRESENT:

TED KATZ, Designated Federal Official
TIMOTHY ADLER, ORAU Team*
RON BUCHANAN, SC&A*
GRADY CALHOUN, DCAS
LEO FAUST, ORAU Team
JOE FITZGERALD, SC&A
JENNY LIN, HHS
JIM NETON, DCAS
KATHY ROBERTSON-DEMERS, SC&A*

*Participating via telephone

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9:09 a.m.

MR. KATZ: Good morning, everyone in the room and on the line, this is the Advisory Board on Radiation and Worker Health, BNL Work Group and we're, we have both Jim and Grady and we're going to get started here.

Let's begin with roll call with Board Members in the room.

CHAIR BEACH: Josie Beach, Brookhaven Chair, no conflict.

MEMBER CLAWSON: Brad Clawson, Work Group Member, no conflict.

MEMBER MUNN: Wanda Munn, Work Group Member, no conflict.

MR. KATZ: And Board Members on the line?

MEMBER ROESSLER: Gen Roessler, no conflict.

MR. KATZ: Welcome, Gen. And do we have Dr. Anderson, too, Henry -- Andy?

(No response.)

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

(No response.)

MR. KATZ: Okay, we'll try to get ahold of Andy because he did intend to attend. That's it for Board Members, let's move on. NIOSH-ORAU Team in the room?

DR. NETON: Jim Neton, NIOSH, no conflict.

MR. CALHOUN: Grady Calhoun, NIOSH, no conflict.

MR. KATZ: And any NIOSH ORAU Team on the line?

MR. ADLER: Tim Adler, ORAU, no conflict.

MR. KATZ: Thank you and welcome. SC&A in the room?

MR. FITZGERALD: Yes, Joe Fitzgerald, no conflict.

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

DR. BUCHANAN: Ron Buchanan, no conflict.

MR. KATZ: Welcome, Ron. Joe, are you expecting anyone else?

MR. FITZGERALD: Yes, Kathy Robertson-DeMers will probably join us in the next hour or so.

MR. KATZ: Okay, that's right, you mentioned that.

MS. ROBERTSON-DEMERS: Hi there, I just -- I had my phone on mute.

MR. KATZ: Welcome, Kathy.

MS. ROBERTSON-DEMERS: Kathy Robertson-DeMers, no conflict.

MR. KATZ: Thank you. Federal officials, whether NIOSH, HHS, other agencies and contractors to the Feds in the room?

MS. LIN: Jenny, HHS, Jenny Lin.

MR. KATZ: And on the line?

MR. FAUST: Leo Faust, ORAU, no conflict.

MR. KATZ: Will Faust, ORAU, thank you.

MR. CALHOUN: Leo.

MR. KATZ: Oh, Leo Faust, sorry. Okay, any other government officials or contractors on the line?

(No response.)

MR. KATZ: Okay, and last but not least, members of the public. There are none in the room; are there any on the line?

(No response.)

MR. KATZ: Okay, so let me just remind everyone on the line to please mute your phones except when you're addressing the group.

If you don't have a mute button, use *6, that will mute your phone. When you use *6, again, it will take you off mute. And please don't put your call on hold.

Just hang up and dial back in if you need to leave for a while. And it's your agenda, Josie.

CHAIR BEACH: Okay, there is an agenda posted on the web. We're going to start our discussions with neutrons this

morning and then we're going to go into internal data discussions.

If you remember, this is our second Work Group Meeting. Our first Work Group Meeting was held in July on the 28th of 2010.

We are looking at the years from 1980 to 2007. We do have an Issues Matrix that we're working from. That was put out in July of 2010, and that's all I have for an update.

Grady, I'm assuming that you're going to want to start this morning with our neutron discussion.

MR. CALHOUN: Well, I think that -- can I assume that everybody received the response we got?

CHAIR BEACH: Yes.

MR. CALHOUN: And that was kind of our go do, our list of items that we needed to address after the first meeting. And it seems to me that it would be easiest just to go

through the actual questions and answers.

I'll rely a lot on Leo on the phone there, but I don't know if -- it seems silly just to read them, but I guess we could read the responses, if that's what you want to do.

Or if there's any particular issues that we had. I know that during -- gosh, it seems so long ago, the interviews that we had. We had group interviews and SC&A Team and Working Group Members and I was on the phone for most of them. And I think Ron Buchanan asked some questions of the folks there that were knowledgeable about neutron monitoring issues.

So do we know, are there any of the, let's see, there's -- are there any specific issues that we have with the responses?

That seems like a better way to me to address these rather than reading the responses.

MR. FITZGERALD: Yes, this is Joe, let me pose this because this particular issue I would characterize as one of more clarity. Because I think when we went through the Evaluation Report originally, last year, we didn't find anything wrong.

But we didn't find a whole lot of treatment of the neutron issue, particularlygiven the fact that Brookhaven did use NTA film.

And at all the other sites we have gone through a number of issues, such as fading and, you know, what not, with NTA film, and we wanted to understand better exactly how that was going to be handled with dose reconstruction.

So a number of the issues we raised were in that context. And what my suggestion is, and I don't disagree with5Grady, it might be kind of laborious to go through the question and answers per se, we all have the response.

But I've talked to Ron and I think, sort of similar to what you're saying, we can go through this and highlight where we still may have questions or an opportunity to engage Leo in some, you know, clarification of what was said in the response. That might be more useful. Does that sound good?

CHAIR BEACH: And that would be helpful to me. I know there were six questions on neutrons. Maybe when Ron is going through it, if he'd kind of pinpoint which ones he's focusing on.

MR. FITZGERALD: Yes, even more so that, I think, you know, given the passage of time, I've also asked him to kind of provide a little bit of a back story.

Okay, you know, why did we raise this question and just sort of bring us back to where we were discussing this in the last Work Group Meeting, so a little context.

Ron?

DR. BUCHANAN: Yes, I'm here, this

is Ron Buchanan, SC&A. Yes, I realize we've all slept in since we went through this in July, and so I think what would be beneficial for the group is to go through what has taken place and I will go through the main issues and where SC&A stands as far as seeing them as Site Profile or SEC issues at this point.

And then we can, perhaps, discuss the path forward for the items that need to be addressed, if that's okay with everyone.

So let's start back at the beginning and kind of look at what's been done. The TBD-6 for Brookhaven was issued originally in August of '06.

SC&A did a Site Profile review on that, and turned that in September of '09. And, of course, this applies both to the neutron issues and the bioassay data.

NIOSH did an ER Report in the same month, September of '09. And then NIOSH did a revised TBD-6 in April of 2010. So a little less than a year ago.

SC&A replied to the ER in the first of July 2010, and I don't know if you all have that in front of you, but I want to kind of use that as a guide today, because that leads us into NIOSH's response, which was issued in the 17th of December of 2010, about a month ago.

In between the meeting and NIOSH's issue of their reply, we did have an Action Item List that went out in August of 2010. And then we did group interviews with some of the older workers at Brookhaven in September of 2010.

And this was a NIOSH and an SC&A group discussion with them on the phone that lasted from, oh, 20 minutes to an hour each. And so what we was trying to get them to do was recall what happened 25, 30 years ago, in some detail for both the bioassay and for the neutron issue.

And, of course, we're having this group meeting today to discuss where we stand

and what we need to do. And so, what I'd like to do is to bring everybody up a little bit to date of why there are neutron issues.

In our Evaluation Report of last summer, that we discussed somewhat at the July meeting, we see that Brookhaven was a research lab so it has many different neutron possibilities. They have the reactor, they had the old reactor, they had the recent reactors, that were shut down in the '90s.

They had, one of the pioneers in accelerators and so they did quite a bit of neutron measurements in the early years, and around '65, when they were bringing the accelerators up, did a lot of experimental and exploratory-type shielding and dosimetry work.

They did increase, the accelerator, they did increase both the intensity and the energy as time went on.

And so this increases some of the neutron dose and makes the spectrum different. And so they did then go into a more of a

heavy ion and collider-type scenario in the '90s, the way I understand it.

And so what we're looking at, perhaps, is a period between '65, when they really started looking at the neutron fields in '95, 2000 era, when they went into the heavy ion collider, which decreases your neutron field.

Now, mixed in with that is the fact that dosimetry changed during that period, the technology changed and also the fields changed at their facility, so they were looking for a different type of detector.

So I don't know how many of you have our response to the ER. We list in there that the NTA film, of course, as we have discussed at other sites, it was used from the '50s to 1995, and of course the main issue there is low and higher-energy neutrons, because it sees them good from about half, about 20 MeV.

The TLDs, thermoluminescent

dosimeters for neutrons, was used from 1996 to present. The CR-39 was used '85 to present. And the Lexan, it was used from '85 to June of '97.

So, now, generally speaking, Brookhaven was conservative in that they did use the radiological affecting as a quality factor which converts the dose to rem equivalent at a factor of ten.

Now, there are four main areas that we want to look at was, does the dosimeter respond, what do we do about the dosimeter's lack of response below a half, .7 MeV?

What about its lack of response to greater than 20 MeV? So that was an issue that we have to look at. That's one, the lower and higher energy.

The neutron, the NTA fading, what would we do about that? And the angular dependency of the dosimeter, and then what about the switch over and how problems develop

there from about '85 to '95.

So those are the four areas we want to look at, and determine how we want to address them. And so these were brought out in somewhat detail in our July report.

And then NIOSH responded to those in December, in the second part of their paper. And it says there's neutron monitoring issues and that's numbered one through six.

And so what I did, what had not been done was to actually go back and do some kind of like semi-quantitative analysis of how the dosimeters were calibrated and so, were they compensated for the lower and higher energies and fading and angular response?

And so what I did is I went back and I got the references that I dug up, the references NIOSH had provided and looked at those and tried to do a semi-quantitative look at the calibration of the system and how it would respond and whether it was missing any dose.

And so what I have concluded, of those four issues, is that the lower energies and the higher energy neutrons, they were present.

But the calibration method that they used at Brookhaven would, was meant to compensate for those. If there is an issue there, it would be a Site Profile issue as opposed to an SEC issue, because they did use ion chambers, Bonner spheres, and carbon-12 plastic scintillator activation to look at the neutron energy spectrums.

And so those points, I think that we can agree would be Site Profile issues. Now the two issues which I do not feel comfortable with, and I don't think have been addressed fully, are the NTA Fading and the angular response.

Now, and also the Landauer problem, '85 to '95. Now I think that the fading and the angular response can be addressed and could be a Site Profile issue if

it was properly addressed.

Now TBD-6 was revised in April of 2010, and on Page 86, it does give a sentence in there. It says a fading correction for NTA film is nine percent per week, taken from Myers 1994, which was a Mound document.

And the angular dependency correction factor of 1.3, which is Kathren 1965. Okay, so, now SC&A's problem with this is that the fading factor of nine percent is the low value from Mound, and we have the same discussion with Mound and with Pantex.

You know, actually Mound, they had a health physicist there said use the 33 per week and the 56 percent fading per week for their dosimetry.

So SC&A feel that nine percent is low for this fading and we're not sure if BNL did any corrections. Now they did some publications on fading, they have several documents on fading, but we don't know if they cycled their dosimeters, if they sealed them.

Fading is caused by lower energy neutrons fade faster, the interactions from them on NTA film. But in addition, the heat and humidity has a big factor and some of the experiments done at Brookhaven and Mound, show that it's very sensitive to humidity and the temperature. So we cannot determine whether the actual dose of record reflects any fading corrections or not.

I mean, would they use a cycle that they corrected for? Did they apply anything to it before they recorded it? So we're not satisfied with the fading factor.

The angular factor of 1.33: generally, NTA film, it depends on energy spectrum, but as a rule of thumb, decreases in sensitivity as you increase the angle of incidence.

So we feel that's probably a reasonable number. However, I went through 16 claims that had possible neutron exposure, found neutron exposures at BNL, and none of

them had any correction for fading or angular dependency.

And this was after, six of those were before the new TBD was issued and ten were after. And so we don't feel that angular dependency and fading is being actually incorporated into the DR Reports. So that's, that brings us to the last issue, and that's the Landauer problem.

And there, as the energy intensities are increasing, they were looking for dosimeters to replace the NTA. And we went over this last time, so I won't go into detail.

But essentially, they were using NTA film plus a combination of CR-39 and Lexan. Supposedly the Lexan was used in combination with NTA for people that worked in accelerators and CR in combination with NTA for people that worked around reactors or sealed sources of the neutrons.

And so I went to the -- again, I

looked at those 16 claims and I could not seem to find any. Now this is a small sampling, of course. I could not find any that had any CR results on it.

In the claims file, if you pull out individual claims, they'll have --

MEMBER ANDERSON: This is Andy, I got disconnected and I dialed back in.

DR. BUCHANAN: Okay. If you go to the claims file, they say NTA film and they have a flag that shows whether it's TLD or Lexan. And so you can go in and find out where the person worked and go in and see what their dosimetry record read.

And it is showing whether it's NTA, Lexan or CR-39, but I could not find any CR-39 listed in the ones I looked at. And so, it does not look like they added the NTA and the Lexan together when they did use it.

And so we are still concerned about the problem that existed in '85 to '95 concerning the dosimetry and Landauer's

response.

And so that is the three areas that we feel still need addressed, is the fading, the angular response and the '85 to '95 dosimetry record issue. Now, is there any questions that anybody has that we need to go over before we start discussing this?

MEMBER ANDERSON: This is Andy, I just wanted to let -- I didn't want to interrupt while you were presenting -- I wanted to let you know I'm on the line.

MR. KATZ: Yes, thanks, glad to have you, Andy.

MR. CALHOUN: I don't know if Leo has anything or Tim. It seems like we discussed this with one of the guys about, that we interviewed.

And there were some questions brought up about what they did and how they compensated for any differences during the switch from Landauer.

It seemed like those questions

were at least answered to most people's satisfaction on the phone at the time. I think, Ron, you were on the phone?

DR. BUCHANAN: Yes, I was.

MR. CALHOUN: And I don't know if we need to ask some follow-up questions to that, but it's my recollection that he thought that the responses that they were getting were conservatively high.

But I may be wrong, I haven't looked at that interview for a while.

DR. BUCHANAN: Well, this is Ron again and SC&A again. No, I didn't feel that the interview answered the question. It was a general response, I felt, a person that wasn't really directly involved with this perhaps.

I don't recall exactly who or what but I remember the interview sessions. And I know that it did not answer the question as far as SC&A is concerned.

And then, when you look back in the files, you know, the data does not list

enough information. For example, if it lists just Lexan, what did we do, what happened to the NTA film?

If it lists just NTA, what happened to the Lexan and the CR-39? And so, you know, that issue is in the data and then, again, the emails went back and forth. I don't feel that that's been resolved because these, some of these emails came out, one that you pointed out in your response.

It came out in like '95 or something. It says, okay, don't use Lexan, use something else, or vice versa. In fact, within a couple of months they switched from using Lexan, not using Lexan and such.

But that was about eight years after the first memo that told them to use Lexan. So I don't feel that that has been satisfactorily addressed.

MR. FITZGERALD: Yes, this is Joe. That was my recollection as well, that we were trying to find somebody in the follow-up

interviews we did that could shed some light on the outcome more than the memos. We had the memos, but the outcome of all that debate.

I want to read an interview which actually was, perhaps, a little more illuminating, that we did as part of the Site Profile Review which we made available some time ago to NIOSH as well, which touches on this issue.

And it also touches on the question of what they end up doing as a resolution. We were interviewing some health physicists from that era, and this is one, this is the question that we were asking:

Is there any additional information concerning the problems with NTA, CR-39 and Lexan neutron dosimetry that would be helpful?

And this is the response:

The discrepancies were the most critical at the low-level doses. There was a wide discrepancy between the NTA, CR-39 and

Lexan system.

We could see a disparity up to at least 150 millirem. As the dose increased, the disparity narrowed. In general, the CR-39 read lower for low dose.

The stated LLD, lower limit of detectability, was frequently missed. There were numerous times these issues were brought to the attention of Landauer, but there wasn't ever a consistent improvement.

Our follow-up question was: given the discrepancies in the different methods, how was the dose of record assigned?

The response: the process was to assign the highest dose to the dose of record. The CR-39 has a threshold of 500 keV, the TLD-6 would cede this 500 keV and below.

And then the other health physicists added, there was a memorandum generated telling them how to assign the dose. I can only tell you, we searched high and low for that memorandum or some documentation that

would kind of put this in perspective.

We could not find it. But that was probably, you know, the most telling. And I guess, Grady, it's not inconsistent with what was in your response.

I mean, I think it suggests that, you know, they were pretty much aware of the issue and were trying to reconcile the disparity.

But we could not find any documentation which pinned down how they adjusted the dose of record and whether the dose of record was always adjusted.

And, as Ron was pointing out, it's not clear from looking at the actual dose records exactly what was done. So there's a level of uncertainty.

Although, from the health physics commentary that we have heard, it seems like, you know, these are smart people and they knew that had to come up with some adjustment. We just can't quite find it.

And this is 30 years, so to be fair about it, you know, it's not necessarily going to be easy to find out the A to B to C that was done in the record.

But that's something I think it's worth trying to cross the T on, because you know, again, as it was allowed in this interview, 150 millirem certainly is an adjustment that would be useful to have included in any dose reconstruction process.

So, that's the only thing I want add, that I thought, you know, going back over all of our interviews since Day 1, I thought that was the closest to getting a little bit more perspective on that.

We didn't get much on the follow-up interviews we did in September.

MR. FAUST: This is Leo. I don't -- I was not a party to any of the interviews, so I can't speak about that. But I do know from all of the material that I've gone through, at least, that they did a whole

series of additional measurements besides their dosimetry using Bonner spheres and Snoopys and carbon-14 and I don't know what else.

But they did a whole series of additional measurements and they concluded that all of them, the maximum error between the measurements and what the dosimeters read, it seems to me was like 20 percent was the maximum error that they found, covering the whole energy ranges, up to and including 20 MeV.

There's also that note concerning the discrepancies between CR-39 and Lexan. And they ordered the stoppage of use of Lexan because of that.

And how they corrected, if they did, in the doses of record, other than recording the highest exposure, I'm not certain.

Because neither Paul nor I have found any place where a correction was made.

Fading, they insisted on a two-week maximum use period for NTA film to tend to reduce the impact of the fading.

And if I'm correct, they did a considerable fading study, particularly in a relative humidity atmospheres upwards of three or four months, if I recall correctly.

And they found that if they used either a desiccant or wrapped that film in some kind of a plastic, they reduce that fading down to where 90 percent was probably a conservative value.

DR. BUCHANAN: This is Ron Buchanan, SC&A. Leo, yes, that's correct. What you say is correct. However, we don't know whether they did seal it. We hadn't found any documents saying they sealed it or used a desiccant or when that started.

And if they didn't, the two week exchange period, obviously from the Mound Study, shows you can lose up to 56 percent, so that's a factor of two, which is significant

in the dose reconstruction.

So we have not found anything that documents what they did to their actual NTA film that the users wore. We did, you know, they did do the studies and they did some fairly good studies, but we don't know what was implemented from that.

MR. FAUST: Yes, I can't -- that study actually that we're talking about, was done in May of -- well, the report anyway was dated May 1975. And unfortunately, it does not say what they ended up employing. So I can't answer. I don't know.

DR. BUCHANAN: Yes, I don't either, that's the reason that we brought it up as an issue. And I agree the Bonner spheres and such were used, ionization chambers, Bonner spheres, and carbon-12 activation.

But when there's a discrepancy -- and so when we look in the records, we don't know really, you know, this is Lexan and a

dose, we don't know if that was the combination.

Because at some points they were adding them, the doses, and according to some of those memos, the NTA and the Lexan or all three or two out of the three, and we don't know which that includes.

And so if some of them were missing some of the neutrons, we don't know if that was included or not. And so, we're not sure what the dose of record actually reflects.

And, like Joe says, if we could find that memo that would help.

MEMBER MUNN: Well, this is Wanda. As having been pointed out here that these are fairly bright people that we're talking about, not your average bear.

And given the philosophy of health physics from the outset, the tendency to be as conservative as possible has always been a basic tenet.

When you have statements that more than one reading, the conservative one was the one that was accepted, it would seem to me that that simply follows the normal philosophy.

Questioning it may be a good academic exercise, but in terms of practicality, in all possibility -- in all probability, the general philosophy would have been followed. Which is, use the most conservative number, which would be the largest number.

CHAIR BEACH: But you also have to see the proof of that. Which is, I think, the problem, we're not finding that.

MEMBER CLAWSON: This is Brad. In following a lot of this, the problem that I'm having following this is that we're going off of memos that have gone back and forth.

But, as Josie has said, there's no proof of what was put in there. And as these individuals being the best and brightest,

there's no doubt to that.

But this is also why we're in this program, is because through the years we have learned things, but the bottom line is, we need proof of what they did do, because this is why we've had to implement programs that everybody would do all these processes the same and monitor people the same.

I guess my problem in reading this is, these are just memos back and forth, there's nothing there that shows us what they really did do.

MR. FAUST: I think that they never used, when they were playing around with Lexan, in particular in CR-39, also, they also used NTA film. And I think that they used either one or the other, depending upon the facility, in addition to the NTA.

And from the instrument measurements that were made, dating back to at least 1965, they found that they were, the maximum error that they found was about 20

percent between what the instrument readings were and what the dosimetric readings were.

And the fact that they used ten for an RBE, later a Q, was certainly conservative. So, all in all, and also we do know that they do record the highest dose, which is the dose of record.

But when you look at it all, it seems to me like no matter what the plastic was used in, or in the dosimetry, that it's always been claimant-favorable, the result.

I mean, that's the conclusion I have to reach.

MEMBER CLAWSON: So, Leo, this is Brad. You're telling me that you've got record of how they did this?

MR. FAUST: No, but all of the data, all of the data from their activities is indicative of what they ended up doing. I can't put my fingers on a document that says this is exactly what we did, I can't do that. At least I haven't found it yet.

DR. BUCHANAN: This is Ron Buchanan with SC&A. Now, I'd like to clarify a point here. It is true that when they did the experimental setup and they did Bonner spheres, ion chambers and carbon activation and put NTA film or Lexan or CR-39 in there, at that particular point, and then had it read, then they came within 20 percent.

But then we look at the memos that went back and forth, in the real world, from the wearers and the process -- the vendor, in everyday work, they were getting factors of two and three different -- in reading, some would read minimum and some would read like 1,000 millirem and then later on it would be reversed.

Lexan would read more, NTA would read less, vice versa. So the 20 percent wasn't across the board. This was in a particular experimental setup when they had controlled conditions.

When it got into everyday

practice, by what the memo said, there was large discrepancies that people that were on vacation, they got readings of 1,000 millirem.

And people that were working in the field were getting minimal. And so it was, we want to put the 20 percent in perspective.

MR. FAUST: I read that too, but I can't say somebody going on vacation and ending up with a horrendous dose on his dosimeter, hard -- you don't know what happened. So, I don't look at that with any favorability at all.

But what you said was in fact correct. That also drove them to insist that they quit using Lexan, which was kind of dumb in the first place.

But, nonetheless, that's what they did. And they got -- they quit using it and rightly so.

DR. BUCHANAN: Yes, but we still have some of the dose of record, if you go

through the claimant files, you'll see numerous entries using Lexan.

MR. FAUST: That may be and probably because it was the highest dose that they got between the two. Because they always did have NTA film there also.

DR. NETON: This is Jim. I'd just like to go back to the fading issue. From what I've heard, it seems like there's been a fairly well-designed study to evaluate the degree of fading on these dosimeters. And, given that we know that, I don't know why this would not be a Site Profile issue because it's just a matter of whether we apply that correction factor or not.

Why is that being discussed in this context? I guess I don't understand.

CHAIR BEACH: The other issue I had with the study Ron discussed, the 16 people that he polled, six of them they found -- and Ron, correct me if I'm wrong on any of this -- the six people were fine, but were

before the new TBD, the ten were after, and he found that they weren't using the new method, so that's another issue, for me too, is how that's -- what's happening with the TBD that dose reconstructors aren't using that?

MR. CALHOUN: This is Grady. I'll take that one on. I need, if Ron at some point could email me those 16 case numbers, that would be great, and I'll take a look at that and see what happened there.

MR. FITZGERALD: As a matter of context, I'll disagree with where you're going with that. It's just that the treatment on these issues in the ER were slight, and we raised them from the standpoint, as I started the conversation, as a matter of clarification as to what was going to be used.

And I think that's where I see the train headed, but we need some clarification. On the other issues, the discrepancies in the Landauer issue, I think there's been a good-faith effort, on everybody's part, to try to

nail that one down.

I tried to find documentation and, you know, after going through thousands of pieces of paper, I mean, we just can't find it.

What would be helpful, I think, is, and I was thinking about this as Leo was talking, what is the, you know, what is the variance that we're talking about? Because it does get less as you go higher in energy.

And really it may just be a relatively minor, you know, you add ten percent or something to certain energy levels, lower energy levels, and if one can't substantiate in any way, shape or form, whether or not the dose of record was adjusted, it might make more sense and be more cost-efficient.

Say, well, okay, really we're talking ten percent or whatever, 12 percent, I don't know what the number is. Maybe it would just be helpful saying, okay, for

conservatism's sake and not to dig any deeper, I think we've dug as deep as we can. Maybe that would be a reasonable way to go.

I mean, I was kind of hoping that the interviewees would be more specific, but I think what we got was similar to what Wanda was saying.

Everybody sort of said, well, you know, of course health physics practice, you would take the higher dose. But it was sort of a little speculative in the sense that, you know, of course that was good health physics practice, we're all smart people.

But nobody knew for sure and there was no documentation. When he said there was a memo, that was sort of like the Holy Grail that we were trying to find and we couldn't find it.

So, in that context, that would be something that might be helpful to do. Just figure out, you know, in the end, what are we talking about?

We're talking ten percent. Maybe it's, you know, it's worth just saying, not to beat a dead horse at this point, but perhaps that would be one way to get to this thing.

CHAIR BEACH: So is that an action item for NIOSH to --

MR. FITZGERALD: Well, that's, the Work Group has to consider that.

CHAIR BEACH: Well, I'm just writing down --

MR. CALHOUN: I have like six right now.

CHAIR BEACH: Oh, really?

(Laughter.)

MR. FITZGERALD: I just don't see any real resolution on that issue, because that's a matter of trying to find some evidence beyond, you know, sort of the more speculative thing.

And rather than try to keep looking for paper, it might be useful just to find out what does it mean, in the end?

CHAIR BEACH: Right.

MR. FITZGERALD: Does it really matter that much? If it doesn't, maybe just let it go.

MEMBER MUNN: It probably doesn't.

MR. FITZGERALD: Well, I'm thinking if it's 20 percent at, you know, the higher levels, then maybe it's something in the order of ten or 12 percent, at the levels we're talking about in most operations, energy levels.

MEMBER MUNN: Or even lower. Ten and 12 percent would be --

MR. FITZGERALD: Well, maybe even lower, I don't know. But it just seems like you could figure that out and if it were --

MEMBER MUNN: Well, it would certainly be claimant-friendly.

MR. FITZGERALD: It would be claimant-friendly. Just to assume that, you know, we can't really nail it down. On the other hand, if they did not, then this is how

much it would come to.

DR. BUCHANAN: Yes, this is Ron with SC&A again. I think, Jim, that what SC&A would like to see is that these items be addressed so that they can be taken off the SEC issue because I think fading is addressable and I think that angular is addressable and even this suggestion that Joe made addresses that issue.

It's just that if fading was a problem, and if you look at 56 percent, that increases your neutron dose by two, if they didn't use any sort of compensation program in their NTA film.

And so that is a large dose factor, a factor of two and then 1.3 on top of that and then, say, 20 percent on top of that. That's leading to, you know, two or three times the original recorded dose, and so that's pretty significant.

But if those issues could be addressed, then that would be under Site

Profile.

MR. FAUST: We -- this is Leo again. We're under the, I mean, we're in the process of trying to find a reference that was actually made by Ernie Piesch over at Karlsruhe, I believe, on fading.

My information tells me that it's probably one of the best fading studies that was ever done. We're trying to locate a copy of that to see just exactly what he ended up with.

It may take us a few days yet to get that, but we're in the process of doing it. Hopefully, from that, we can put this fading issue to bed.

Everybody knows that we had a fading problem, but nobody knows how we went about trying to alleviate that problem. One other thing, there is a note, again dated 1965, that suggests that regardless of what dosimeter -- well, this is NTA film, obviously.

Regardless, they say the technique is always overestimated exposure by between 30 percent in a factor of about five.

So, you know, when you read all this stuff, you've got to conclude that their dosimeter program ended up with an overestimation of what actual exposures were encountered.

And I can only assume that that's what was reported was, whatever exposure was measured is what was recorded.

Anyway, it seems like we're conservative regardless of what we do.

DR. BUCHANAN: Leo, this is Ron with SC&A again. Now, the fading study, I missed out, who did this that you're referring to, that you're hunting?

MR. FAUST: Ernie Piesch.

DR. BUCHANAN: And was he with BNL?

MR. FAUST: No, no, no, he's with Karlsruhe, Germany. His last name, you spell

it P-i-e-s-c-h.

DR. BUCHANAN: And do you know when that study was done?

MR. FAUST: About 1975 is when the journal was issued, but I can't tell you if that's when the study was done or not. But it probably was done prior to '75, not too much before that.

DR. BUCHANAN: This is Ron again. Okay, well, what we need to know, you know, what BNL did, if we can find anything that BNL did about fading.

If not, then we have to use a conservative approach and assume they didn't and apply some factor. On the 1965 note about 30 percent the five times, I agree at that time that was probably true.

Now, as they increased in energy and they had higher-energy neutrons, I think that that conservative factor probably narrowed but it still probably was conservative.

We don't know that for sure. And so that's the reason we have concerns about the '85 to '95 error, because of the memos that went back and forth.

So I agree, in '65, they were pretty conservative at that point.

MR. FAUST: Yes, that value goes up as high as 30 MeV neutrons. Does that -- that certainly covers the energy ranges in existence at Brookhaven at that time, and probably later also.

CHAIR BEACH: Yes, I have one more question before we review the action items. How about badge -- people that didn't wear their badges. Is there any -- how will you handle that? Is there coworker modeling done?

MR. CALHOUN: We actually do have a bit of a coworker model that we're using, but I would have to see if, there's got to be an ambient, there may be an ambient neutron dose assigned.

I don't know, I'd have to go back

and look at the TBD, I don't know off the top of my head.

CHAIR BEACH: And that's the same TBD-6?

MR. CALHOUN: Yes.

CHAIR BEACH: Has SC&A reviewed TBD-6 by any chance?

MR. FITZGERALD: Well, Ron, we haven't provided written responses.

MR. CALHOUN: No, I'm talking Technical Basis Document 48.

MR. FITZGERALD: Oh, 48.

CHAIR BEACH: Forty-eight.

MR. CALHOUN: Yes, that's the Brookhaven TBD.

CHAIR BEACH: Okay, so is there any other items to cover on neutrons, before we go into that -- hello?

MEMBER ANDERSON: I don't have any comments.

CHAIR BEACH: Thanks, Henry. Okay, Grady, you said you had six and then you

lowered it to three.

MR. CALHOUN: Well, let's see, I just had a little, some notes written down. Let's see, I'll see what I've got here.

MR. KATZ: While you're looking, one is that Ron is going to email these 16 cases to Grady.

MR. CALHOUN: Yes, that's one thing.

MR. KATZ: At SC&A.

MR. CALHOUN: I'm going to take a look at that. And then I have: need to find out if BNL did any fading corrections prior to issuing the dose of record. Probably a TBD issue, is what I have written there.

Most of these others are just bullets under the Lexan/NTA issue. So I think that we're going to look for any additional documentation, memorandum, whatever, that may discuss further what was done or if there was any instruction on how to assign the higher of the two doses.

CHAIR BEACH: Okay, and then Joe talked about a variance?

MR. FITZGERALD: Well, no, I was saying if that didn't bear fruit, it was a two-part thing. If that doesn't bear fruit, because we did look for that, then maybe the Work Group would benefit from knowing what the variance would be. The range, and whether that was seen by NIOSH as something that could be accommodated.

CHAIR BEACH: So is that something, Grady, that you can just do as a secondary, if the first one doesn't bear fruit, as Joe indicated?

So that we don't -- that we can just keep moving forward?

MR. CALHOUN: What was the actual specific issue?

MR. FITZGERALD: Well, the issue is that we've been looking for that, I call it the Holy Grail.

MR. CALHOUN: Yes, sure.

MR. FITZGERALD: The documentation on what they actually did, in terms of adjusting the dose of record. If you don't have any luck finding some documentation to that effect, the fallback position is just, you know, does it really matter, what's the variance of all of --

MR. CALHOUN: What would be helpful is a discussion of the variance over range, maybe we can just adopt a correction factor and does it really matter?

MR. FITZGERALD: Range of energy. And can it be accommodated, just add it in just for the sake of claimant-favorability and we'll be done with it.

MEMBER MUNN: I think if we have the claimant-favorable boundaries, then --

DR. NETON: Yes. At some point we have to acknowledge the records aren't findable and we're going to have to move forward one way or the other.

MEMBER MUNN: Is claimant-

favorable in the findings? That ought to certainly cover any problems with any issues that would arise.

CHAIR BEACH: Okay, and Ernie mentioned the Ernie P. study. Are you actively looking for that, Leo?

MR. FAUST: Yes, we are.

CHAIR BEACH: And if you obtain that, would you make that copy available to the Work Group, SC&A?

MR. FAUST: Sure.

MR. KATZ: That's the study on fading.

CHAIR BEACH: Fading, yes.

DR. BUCHANAN: This is Ron Buchanan, if I could interject one thing --

CHAIR BEACH: Yes, please.

DR. BUCHANAN: -- on the issue of correction factor.

I guess a starting point would be that if, under controlled conditions, they said that they can measure within plus or

minus 20 percent. And honestly, the minimum claimant-favorable figure would be 1.2, because that would be 20 percent.

So that would be a starting point. We need to look at that and go on from there.

CHAIR BEACH: Okay. Is there anything else on neutrons? And I'd like to ask, are there any petitioners on the line at this time?

(No response.)

CHAIR BEACH: So I would suggest that we go ahead and take our break, before we get into the internal. Is everybody agreeable to that? Ten minutes?

MEMBER MUNN: Sure.

MR. KATZ: Sure.

MR. FAUST: How long are you going to be on break?

CHAIR BEACH: Ten minutes.

MR. KATZ: Just ten minutes.

MR. FAUST: Okay, I'll call back in.

MR. KATZ: Thanks.

(Whereupon, the above-entitled matter went off the record at 10:02 a.m. and resumed at 10:14 a.m.)

MR. KATZ: Okay, we're reconvening after a short break. This is the BNL Work Group, Advisory Board on Radiation and Worker Health. Andy, do we have you back, and Gen?

MEMBER ROESSLER: I'm here.

MR. KATZ: Hi, Gen. How about Andy? Okay, I'm sure he'll join us soon.

CHAIR BEACH: Okay, so what we're going to get started on now is the internal data issues, it was actually Issue Number 1 in our Matrix that came out last July.

I think what we'll do is go ahead and let Grady, NIOSH start with responses to those questions.

MR. CALHOUN: Okay, basically, everybody knows this but the reason that we established 1980 -- or the reason that we have said that we can't do dose reconstructions

prior to that, had to do with records retrievability. They did not keep their records, BNL did not keep their records in a very readily retrievable manner.

So, anyway, one of the go dos that we had was to interview some individuals, well, actually, it was interview the individual currently compiling records and ask his opinion on what he has, when the records are complete, et cetera.

Well, there's actually not a single individual that does that. When we make a records request, BNL goes through two or three different record sources and looks for the records and compiles them and then sends them on to us.

One of the, I don't know if it's in this first one or not, but Department of Energy was tasked with -- there it is, it's C -- was tasked with coming up with a nice description of how they, in a step-by-step manner, look for records before they give them

to us.

And, as of today, they've still not provided that to us. So, anyway, but basically we did talk to a few people that were involved in records, as part of our interview.

It seems like everybody is on board with the fact that there was an effort in the late '70s to try to consolidate records. Our Evaluation Report was based on what records were actually retrievable.

So what we did is we had this 69-person study, is what we call it. We had maybe ten or so people per decade. Now these are random folks, these were not necessarily claimants. We asked the -- all of these individuals were people that we had found memos for that said, you need to go get a whole body count.

So what we did was we requested all the dosimetry data as we would, as if it was a dose reconstruction request from Brookhaven

National Lab, for all of those individuals. And we kind of grouped them to see what we got back, because we know that these individuals were determined to have needed some type of bioassay and they were told to get that bioassay.

So we wanted to find the records and see did they get the bioassay. And the way it fell out and this table is in the ER, is that in the '70s, and this was only from '73 to '79, we got 75 percent of the records.

Beginning in 1980, we got 92 percent, which was, one record was missing. We subsequently found that record, but it was 18 months after the request date, so we didn't count it.

So we have a whole body count for that, for that guy, but it was 18 months after the request date so we didn't count it.

In the '90s, we had 11 people. They were all in 1992, actually, and we got 100 percent of all of the records from whole

body counts. So that's how we came up with 1980. Now, as part of this re-review, I guess I'll call it, I was going through some documents and I evidently failed miserably in this table that I put in here.

Because I don't think I explained it well enough for Josie to understand it, you know. This was not my work. There was a memo ivehat was out there that requested missing whole body count data.

And I don't know who the person is, I've got the SRDB number --

MR. FITZGERALD: Milt. Oh, I'm sorry.

MR. CALHOUN: It was Miltenberger? Okay, good.

MR. FITZGERALD: I'm not sure --

MR. CALHOUN: Oh, sorry. But anyway, we had that, he made a request and said, hey, I'm missing these records from these individuals, can you give them to us? And this was in May of 1980.

And it went back from '73, all the way from 1973, by year, and the number reported I put in this table. Now this is what he had asked for.

I went through the records that we have. Now, keep in mind, we don't have every single record that was ever generated at Brookhaven.

And the vast majority of these individuals are not claimants, these are just records that we have found in our data capture.

And what we found is that there's actually a very significant drop off here, but the percent that I could not find, you can see that on the far, right-hand corner, ranged basically from zero percent to 80 percent.

And in '79, 80 percent of them were still missing. Now that's only four out of five cases, that was a small sample number. This memo was put out in May of 1980, so there were only two whole body counts that he

determined were missing in 1980, when he made the request to, what I'll call the project managers of different divisions.

And I have both of those whole body counts, I found those in the data. So this was not an independent review that I did, this was based on a memo that he put out in 1980, and I just tried to follow that up.

So, I did poorly in explaining that table that I put in there, I should have done better on that. I guess another part of my response here is that we, in part of our interviews that we had, I guess Ron mentioned it was September.

Gosh, it seems like a long time ago. You know, we did ask the question of folks and, as I said earlier, you know, everybody there that we talked to that had an opinion about the records, thought that, you know, right around 1980 and or late '70s, things were getting together.

We were starting to get

consolidated records. Nobody really had any strong feeling that records should not be available. That's all I have on 1-A, if we want to talk about that before we move on to 1-B?

CHAIR BEACH: Yes, let's do that.

MR. CALHOUN: Okay.

MS. ROBERTSON-DEMERS: This is Kathy DeMers. I have a couple of questions about the table.

MR. CALHOUN: Okay.

MS. ROBERTSON-DEMERS: Okay, I know you referenced an SRDB number. But if I, first of all, that makes this 1980 memo was to Rothman from Miltenberger, so I don't know if that constitutes Department Heads.

But the data that immediately follows it is called Missing Results for Whole Body Analysis. And I could not reconcile the numbers in your table with the data provided in those two pages.

And I'm wondering if you can be

more specific about where you got the data for each of these columns?

MR. CALHOUN: I can, I can't do it right now, because it's going to be in multiple, multiple documents, but I can.

MS. ROBERTSON-DEMERS: Okay, so you can give us the page numbers?

MR. CALHOUN: Yes.

MS. ROBERTSON-DEMERS: Within that?

MR. FITZGERALD: It's a derivation of that table?

MR. CALHOUN: Yes.

MR. FITZGERALD: Okay.

MR. CALHOUN: It's just going to be, yes, Column 3 and Column 5.

MS. ROBERTSON-DEMERS: Okay, and I wasn't sure how you determined what was found amongst the missing records?

MR. CALHOUN: That I found records for those individuals.

MS. ROBERTSON-DEMERS: So you have, separate from this SRDB number --

MR. CALHOUN: Yes.

MS. ROBERTSON-DEMERS: You have data?

MR. CALHOUN: Yes.

MS. ROBERTSON-DEMERS: For example, in your set of 69 or --

MR. CALHOUN: No, it's completely, this is completely different. This was just, I saw that he made this request, you can see that some of them are checked off, but I couldn't put a whole lot of faith in that.

So, I went back to the other documents that I had and looked them up, name by name, to find if there was a whole body count.

And they are in, I promise they're in at least five or six different documents. But I can look that up. I think it's going to take a while. I should have wrote them down.

MS. ROBERTSON-DEMERS: Well, if we had the page numbers, it would be more helpful because that SRDB document is over 100 pages.

MR. CALHOUN: Right, and really, really the only one that matters is 1980.

CHAIR BEACH: Well, 1980 and beyond.

MR. CALHOUN: But this specific one was issued in March or May, because I can't go any further than that. So what I'll do, is I'll just focus on 1980, because prior to that doesn't matter.

MS. ROBERTSON-DEMERS: I also wanted to say something about the interviews that we did. It wasn't clear to me that they were coming out and absolutely saying that it was reasonable to assume that everything was centralized by 1980.

They weren't coming out with a concrete declaration that that's what was happening.

MR. CALHOUN: I agree.

MS. ROBERTSON-DEMERS: It was more of a, yes, it was right about around then. And if you go down and you read the, well,

this is under Section C, really.

And read how you summarize these interviews, you kind of get that feeling. So they never came out and said, yes, this is a concrete date. And, in fact, I actually got the feeling that they were saying, yes, it was reasonable sometime within the early '80s.

One of my concerns about these interviews and stating so concretely what these interviewees believe, is that they have not undergone review by the interviewee.

And you provided us with a phone number, so we're going to give those out.

MR. CALHOUN: Okay.

MS. ROBERTSON-DEMERS: And allow them the opportunity to validate what we have summarized.

MR. CALHOUN: I in no way meant to imply that they said a concrete date, because they certainly did not. They just, nobody thought that that was unreasonable.

MEMBER MUNN: We wouldn't be

talking about this now if they had.

(Laughter.)

MR. FITZGERALD: Well, you know, this is Joe. I think it's important to remember the context. I think it was Dr. Roessler who felt it would be important to, you know, revisit the question of the [identifying information redacted] memorandum, since that was cited in the Evaluation Report, and see if we can find some of his contemporaries that could speak to, first hand knowledge of what happened and maybe what he meant in the memos, since we only have that one memo.

That memo, again, to put it in perspective, was a proposal to his management that it made sense to do this, to centralize into his division, the whole body counting responsibility.

But, you know, that was the only sliver of information we have. And so we went back and started talking to some of the same

people that we had talked to earlier, and to be very fair about this, if anyone asked me to think back 30 years, to what I was doing in one year 30 years ago, and did I know about, you know, what one of my coworkers was up to.

I mean I think generally the response is, you know, I have no idea what I was doing 30 years ago. And, yes, I knew [identifying information redacted], but, you know, I don't know about that memo, I don't know about any specific attempted to centralize, but no.

You know, certainly it would, it would make sense that things were getting better in the early '80s, that's kind of in general what I kind of recall.

But, you know, when we were pressing their memories to come up with something, I thought that was, it wasn't something that could substantiate the original question that Dr. Roessler raised.

I think it was just their

acknowledging, in a general sense, no specific knowledge, no specific, you know, information that, yes, you know, certainly in the '80s, things got better.

That was the context that we got that with. The only thing I would take exception, Grady, I don't think they were on board. I think they were reflecting that, yes, general things got better during the '80s, but that wasn't enough to give us, I think, the specific information that would allow us to feel more comfortable, that it was January 1st, 1980.

So, you know, again I think it was a good faith effort by all of us to try to find somebody who could say, yes, I remember the memo, I remember when that went in, I remember what happened.

That would have been perfect, but that did not happen. So, I think it was important to do that. My comment on this thing, you know, I think everybody agrees the

records at Brookhaven, even in the '80s are very sketchy.

I mean it's just the nature of the beast. And part of what I hear Grady talking about is, given that, and we normally do sort of a database analysis.

Well, in this case, we already know the data is in different places and different forms and hard copy, you know, it's just in rough shape.

So, I think NIOSH, and appropriately so, looked at a retrievability process saying, okay, we're not going to look at this thing as a whole, but we're going to see, empirically.

It makes sense. Empirically sample by decade, by year and see, you know, when we start feeling more comfortable that we can actually recover data.

And, given the circumstances, that makes perfect sense. And to see if there's any documentation where, almost in the same

vein that, where somebody like this individual was making a special request.

He was getting more success in getting or seeing that the bioassays were done. So, in a way, that was almost an empirical test that was done at that time, by an individual.

So, same issue as retrievability. But my concern is that when you base the retrievability sampling or test, on these memos requesting, I don't know whether it's biasing the sample.

Because where someone is actually, I think this is something I'd like to discuss. When you're actually making a request by memorandum that this Joe Blow needs to be bioassayed.

That's a pretty, you know, that's a special request. I mean there's routine monitoring and then you really are asking for somebody to be bioassayed because they obviously must have been seen as exposed,

above and beyond your normal program, routine program.

So, you know, the 69 sampling that was done, even the Miltenberger request. I'll throw that out. I'm not sure if that's the universe of bioassay sampling.

I think it's certainly the universe of specially requested, you know, please bioassay this person. So, that would be one cautionary note, because I don't know what the answer is.

But that's certainly is one question in my mind. The other question gets to more the state of the Brookhaven records.

I think we kind of agree that the records aren't in good shape and they're working hard to find records and get them together and make them available and all that.

I don't know what the status is now, but when we were out there, we met the individual who was running around. And he was still pulling records together. He wasn't

sure exactly what the situation would be.

But when we step back from this, there seems to me two real central questions. One is retrievability, which is, can we even do dose reconstruction?

Can we ask for records and get them? And I think NIOSH has made a good faith effort to figure out, you know, let's do some sampling to see if that's even doable.

And the question I have for that is how's it going? You're doing claimant, you know, you're actually doing dose reconstruction on claimant files and to us it would be useful to know, in real time, whether or not you're getting the records for the active claims as they stand.

I mean the sampling is one issue, but you're actually now in the real thing. So that would be a helpful thing to know. The second thing is, apart from the retrievability question is the completeness and aptitude question.

This Work Group, this Board, has to answer a question. Are the records complete and sufficiently adequate? And that goes to, you know, question of coworker.

Where you have individuals that don't have a dose, how are you going to assign that dose. And you have to have a complete enough set of records that you get a distribution that represents the site.

And it gave me great pause when we were talking to -- in fact the individual who was actually trying to get this stuff together for NIOSH, and he was, you know, sort of like going door-to-door, if I may, at the lab, trying to see who had records.

And the first thing that crossed my mind is that's going to be a heck of a challenge, being able to feel you have a complete enough set of records that you could construct a coworker dose model that would be representative, sufficient representative, if you felt the distribution was there.

I know the last time we talked you said you hadn't had, put a coworker model together, right?

MR. CALHOUN: Not completely.

MR. FITZGERALD: And, so the second part of the question is, apart from retrievability, are the records complete enough that, in fact, a coworker model is even feasible. And, as of today, I don't have the answer and I don't think you do either.

Which is central to this Board's decision on an SEC, I believe. And I think that, I'm not sure how long you want to wait until Brookhaven has searched, you know, for records, but I think that assessment of what we've got, is it complete enough that you could have some confidence on distribution that you could come up with a coworker model or not? And if we don't either know or don't think so, based on what we can understand is the state of the records, then I think that puts everybody in the same situation as, you

know, what are we going to do for missing doses?

So I can see that the issue in those two parts, and I can emphasize on the retrievability question, you have no choice. You have to look at retrievability because you can't go from A to B on dose reconstruction if you can't be sure you're getting records.

But then you still have that second question that has to be answered, if somebody don't have a dose of record, and you're going to assign something, how are you going to do it.

So, I have some cautions on the first, but I really am lost on the second. And it would almost, you know, at some point, one has to then go and do what we would call a Data Adequacy and Completeness Review and just say, what do we got?

Is there enough there it could support the coworker dose model construction and we don't have anything to look at, because

I guess you haven't done it, but that, you know, before we go too far, that certainly is something that we have to look at.

MEMBER MUNN: Well, before we go any further, why don't we have a reality check here. We've gotten pretty esoteric about, we're wandering around out there in the general miasma of what might we have where?

The reality is this is one of the nation's leading research and development laboratories. By definition, it is not a process.

It is not an organization. It is not a site where a charge was given to what was going to take place there and that charge was followed through and developed over time.

That's not what --

CHAIR BEACH: May I ask a question? Are you talking the charge being the memos that we have read? Is that the charge?

MEMBER MUNN: No. I'm talking about the basic charter of this -

CHAIR BEACH: Of the work at the lab, okay.

MEMBER MUNN: The basic charter of this site is not like the basic charter of Mound, or Oak Ridge, of Hanford. This is not the same kind of thing. And we, if we approach this with the concept that we're going to try find the same set of data, the same set of records that we find at production facilities, or pure development facilities, then we're fooling ourselves because that's not going to happen.

When we talk about coworkers, we're not talking about coworkers who were on a single site that did a single thing, and who shared, even if they didn't have, they had many different jobs, but they were all in the same place, the end result, the goal for the site was the same.

This is a site where there were two dozen different activities going on at the same time. And the need for record keeping in

each one of those projects, would be entirely different, entirely different.

One can see how it would be illogical to be having a strong dose reconstruction activity going on for some project where the level of exposure in that project was minimal, as opposed to a project where esoteric kinds of activities were going on with unusual materials or with unusual levels of energy.

It is an extremely diverse site with extremely diverse projects and they've changed over the years. So for us to even go searching for the kinds of records that we would like to have, that we've seen in other DOE sites, may not be a realistic goal for us.

CHAIR BEACH: And that's what makes this a potential SEC issue. Because the workers still deserve to have those dose records found and attributed to whatever dose they may have received.

MEMBER MUNN: But that's a part of

my point, too. The part of my point is that the probability, this is another one of those can you prove a negative?

Can I prove that this worker was involved in a project that did not require close exposure monitoring. How can you ever prove that?

I don't believe it can ever be proved. I don't, there's no reason why it should be proved, if the project -- but, of course, that worker is not going to be with that project only.

After 14 years, that worker is probably going to be involved in some other project. So, it would be expected that an individual worker's record would not be continuous, the way it is, or the way we would like it to be in other kinds of -- I can see I'm losing the audience.

DR. NETON: I think this speaks to the issue of what we talked about in Santa Fe, which is this, you know, what do you do with

these sort of low dose facilities where they handle a lot, for lack of a better word, exotic radionuclides, where in general there is the, at least impression, that most people didn't get exposed to very much.

They weren't, you're right, these weren't factories. They were doing bench top, for the most part, experiments working with small amounts of radionuclides, so how does one establish that these exposures were low and put some upper bound on those doses.

And I think, as I mentioned in Santa Fe, I think the approach that needs to be taken is to look at the health physics program that was in place, or the start of one.

Were they consciously aware, were the aware of the hazards and was there some type of evaluation done, of the hazards, and a decision made whether this constituted some potential for exposure or not.

And I think, we're in the 1980s.

And, I don't know, maybe Grady is going to shake his head on this, but it seems like we should be able to find some sort of program documentation that substantiates that.

We've made some decisions, we've looked at the hazards and we evaluated them. And they were either small or large and here's what we're going to do to either mitigate them or monitor them.

MEMBER ANDERSON: Well, this is Andy. And again I think we may not get specific values, but I think what you're saying is there ought to be some qualitative evaluation made at some point.

And that should be recorded somewhere.

DR. NETON: Well, exactly.

MR. FITZGERALD: Before we go too far on giving credit to the program, you know, we also talked about this in Santa Fe, that the regulation calls for quantitative analysis and I think quantitative in the broadest

sense, not just numbers.

But certainly it's something beyond program performance. We would think the 1980s would be the great awakening. But since I was in DOE in the 1980s, I can tell you that wasn't the case.

It was an evolution that started in the mid '80s and culminated with Tiger Teams in the early '90s. So, as far as the early '80s, no, I don't think there was a great wellspring of change in the Energy research labs tending to lag behind everybody else.

Pretty much because of what you said. They weren't really seen as facilities with high source terms, so the spotlight wasn't really on them.

And going back to your comment, I agree that the diversity of the labs is a challenge. And certainly the fact that they didn't really have these kinds of production facilities and the sources, you know, led to situations where they did it activity-by-

activity more.

It wasn't an overall program. So you had a decentralized approach. Now the flip side of that is that's a real challenge with this program.

And we've confronted the same challenge at the other laboratories. This isn't the only laboratory. We have the defense labs, we have the other Energy research labs at Berkeley and what have you.

And the issue is the same. And what I'm saying is that, you know, you need certainly the act recognized in the beginning that, you know, you're going to find a rather diverse situation on the part that some facilities will have wonderfully centralized and automated data records.

Dose records, so that it's going to be readily, you know, much more feasible to do those reconstruction. In other cases, you're not going to have that good fortune.

You're going to have situations

where the records are not centralized, they're not in good condition, are missing. And the Act provides for the SEC process when you have situations where the records are, in fact, you know, just not really adequate.

And so what we're aiming toward is saying, okay, given the reality, in this case Brookhaven, how are you going to, in fact, do dose reconstruction with sufficient accuracy.

Is there a way to get there, from A to B? And, as I was saying earlier, I think the approach that NIOSH has taken, starting with retrievability, is about the only place you can start on that question.

Because you're looking at a very direct question, can we even, you know, retrieve the records that would support dose reconstruction for the time periods in question.

That's more of an empirical approach, that's why I'm saying, you know, saying, okay, let's pulse the system and get

some level of confidence that when you pulse the system we get what we need.

But the other question I would raise, is a broader question of, you're not going to have, you know, when you have claimants, you're not always going to have a dose of record for that individual. And you have to rely on some ability to assign a coworker dose.

And it may just be facility-specific, and I think for a laboratory that's very appropriate. And what we've done at other sites, so you look at facility-specific coworker doses, you don't do everybody.

You don't do the entire lab, you just pick those places in those time periods. Where clearly you have the potential, this was what Jim was saying, the potential for exposure.

And you use that data to assign a coworker dose. But what I'm questioning is 1980 and beyond, do we in fact have adequate

records to provide that information for those facilities.

And I don't think that question has been answered, you know, in the process that we've been through so far. And I think that's got to answered before we have a level of confidence on the SEC.

CHAIR BEACH: Well, one of the, can I stop you just for a second?

MS. ROBERTSON-DEMERS: This is Kathy DeMers, can I kind of remind you guys of an interview that we did in 2009, with the personnel monitoring group.

And one of the interviewees that we talked to September, actually referred us to one of the individuals who participated in this interview.

I just wanted read this back to you, because it conflicts with the information that we were given in September. Which means we have to go back and rely on the record.

They said BNL radiation exposure

records can be broken into three categories. The later the person's start date, the more complete the record for internal monitoring.

From the 1940s though the 1970s, BNL maintained an individual folder by name. From the 1970s through the 1980s, there was a transition to electronic recording.

Unfortunately, the folders became increasingly incomplete during this time frame and data are missing. This is the period of most concern.

From the '90s to the present, there is a more systematic and complete electronic-based record keeping.

They also mentioned that one of the problems they had was in the folders, they had indications that someone had, for example, bioassay, but they had no results. And at the time, they were working on compiling a list or a catalog of data, so that they would know all the different places they had to go, to compile a complete record.

Now those interviews were done, like I said, in 2009.

CHAIR BEACH: What month was that Kathy?

MS. ROBERTSON-DEMERS: Let's see, the interview with these people was done on May 19th, 2009.

CHAIR BEACH: Okay, thank you. I remember reading that last night as I was reviewing these older interviews.

The other thing I want to bring up is, that I was going to say just before Kathy spoke, is when I was looking at the interviews that we did back in 2009, a lot of these were considered event driven.

So, if there was an event, then they would bioassay for that event. In some cases, the event was brought to the attention by the person that took, went home and thought, oh, well maybe I have a problem.

I guess, the bottom line here for me is what was considered an event at the lab?

I'm thinking when there was an interview I read on whole body counting.

The interviewee or the whole body counting folks would come in with contaminated lab coats, so they would send them out and have them change into Tyvek suits.

To me, that's an event, but it seemed like, and Grady you mention that in your response back. But it didn't seem like it was considered an event at that time.

So, I guess I'm curious of what was considered an event and what was not considered an event.

MR. CALHOUN: That particular issue is one that, you know, when you're working, when you're working at a production facility or a lab, when you're handling rad materials, your lab coats are going to get contaminated.

They're going to get washed, but they're never going to be free of contamination that could be seen on whole body counter.

You could hold it, you could wave a wand over it all you want, and not see a thing. But, as soon as you bring it into the whole body counter, you see contamination and you know that that's not inside.

But, aside from that, what I have and I'm kind of jumping down to B, but it's very much in line with what we're discussing here.

I've looked at so many of the documents, over the last couple of months. I have found documents before 1980 and after 1980, that say that anybody with potential of receiving 100 millirem internal dose, needs to be monitored internally for that.

I have found documents that show that prior to maintenance activities, things were surveyed before the work could get done, to make sure that proper precautions were taken.

I have found documents that show that bioassay for exotic nuclides was taken

because something didn't go as planned. I found documents that list the thousands of smears and air samples that were taken in certain facilities.

So where I believe that we've got a firm indication that a program was in place, and that there was a threshold for monitoring. Like Wanda said, and I've only, I've been to the site multiple times, I haven't toured the whole facility.

It's like a big university. And I would say that more people were in jobs that had no potential for exposure than were in jobs that had potential for exposure.

So that pretty much necessitated the activity-by-activity or department-by-department determination on, of who's going to get bioassayed.

I don't believe that the bioassay was generally incident driven. From the memos that I've seen, they're like project specific. You know, these people in your group need to

be whole body counted.

It's not because it was an incident, it's because these people need to be whole body counted. And then we believe that this monitoring was done, but I can't prove it until 1980.

Nothing before then, even though I believe that these people were monitored, I just can't prove it because the documents just weren't there.

So that's why I don't know of many other options other than falling back on the empirical data when somebody says they should be monitored and then we find out that they, in fact, were monitored.

That's where we are with, again, that's just kind of just banging on that, but coming up with a 1980, date.

MS. ROBERTSON-DEMERS: Grady, this is Kathy DeMers, I had another request for you, back under, I guess, Item B.

MR. CALHOUN: B as in boy?

MS. ROBERTSON-DEMERS: Yes.

MR. CALHOUN: Okay.

MS. ROBERTSON-DEMERS: You said that you looked at eight employees?

MR. CALHOUN: Oh, okay, yes, I didn't even get to there yet, but go ahead, continue that.

MS. ROBERTSON-DEMERS: And you looked at their CATI interview and determined whether they had mentioned that, whether a bioassay was collected or whether they had participated in whole body counting.

MR. CALHOUN: Yes.

MS. ROBERTSON-DEMERS: And my question for you was whether you could give us the NIOSH ID number for those?

MR. CALHOUN: Sure.

CHAIR BEACH: We jumped ahead a little bit to B. Is there anything else under A that we have not covered?

MR. FITZGERALD: Well, again, I'd like to have this discussion on the, how the

coworker approach is going to be done at Brookhaven. Just like it seems like it's a threshold question that the worker has to address at some point.

I know, based on the last Work Group Meeting you had said, Grady, that you have not addressed that, but I think just to hear from you what the plans are, what your sense of it is? Is it a matter of waiting for Brookhaven to sort of get to some point of records completeness before you look at it?

Or, are you looking at it now and you have some initial thoughts on it?

MR. CALHOUN: It's on the list, but it's pretty far down on the list. I know that we've recently received a big bunch of tritium data and other urinalysis data with thousands and thousands and thousands of entries.

Those are for later years, though. I want to say that those are like in the '90s.

MR. FITZGERALD: Ninety's.

MR. CALHOUN: Yes. But they were, I'm told that using the term database is not appropriate, it's a list of intakes and results. So it's not as easy to wade through as some other things.

But I think that we'll look at that. Certainly, right now, if somebody that worked past the '90s, or past the '80s, is working in a job that doesn't seem to, they don't have any dosimetry at all, we assign ambient for internal and external.

I'll have to look back and see what the thoughts are for coworker, I don't know for sure on that one.

MR. FITZGERALD: Because, yes, the other thing too, I guess based on the last Work Group meeting, you know, the status of the DOE efforts. DOE -- the Brookhaven Lab efforts to bring these records together, you weren't able to get a handle on, you know, how they felt or even what their spreadsheet looked like at this stage, because of their

Privacy Act concerns.

Which puzzled me a little bit, and I guess, you know, as I understand it, government-to-government, we're all one government. That should not be an issue and I'm kind of puzzled why they would be citing Privacy Act to another federal agency.

MR. CALHOUN: Well, you know, on the same thing they gave us all this data just now, and that's not of claimant's either. So, it's kind of --

MR. FITZGERALD: I'm puzzled by that. I think the notion of how complete do they think it is and what their spreadsheet looks like. It should be accessible by NIOSH and I think Greg needs to address that.

Because, you know, I think this whole question about what are we dealing with as far as the body of records. This is so central to this Work Group and what you're doing, that you almost have to know that.

MR. CALHOUN: Right.

MR. FITZGERALD: And that would also inform this question about are we on stable ground for a coworker thing, for those facilities that really require it.

Again, I think it's going to be facility specific and time period specific. Because I think that the, you know, whether it's the reactor, certain time periods, maybe certain, maybe high flux beam reactor.

You know, there's certain facilities where you would probably want to have a pretty good sense that the distribution of dose is such that you could use that for workers that claimed they worked there during that time period. But I don't know how you can get there without knowing whether or not the lab is, has what they have or, you know, that part of it, I think.

So I would say that would be one question as to reach resolution as to where they stand as far as retrieving what records they have --

MR. CALHOUN: Where BNL stands?

CHAIR BEACH: Well, and what have you done to retrieve records and what are you planning to do in the future?

MR. CALHOUN: There's, well, we've gotten these two big data dumps recently, and we've had our folks go through all of those, in link, by name, any of the data. So, even if Brookhaven weren't to give us that information, we will have that link to those individuals.

We're also going to go through the process, like I just, just the other day I found, it was 420 pages of termination urinalysis over multiple years.

And we're going to link those by name too, to any claimant that comes in, just as a stopgap measure in case we're not getting the right information.

That will help people prior to 1982, because we won't just say, oh, we can't assign any dose. If we've got some dose for

people in the SEC period, and they've got skin cancer or whatever, we'll be able to assign some dose based on that, too.

So, it is certainly an evolving process. But, you know, I do feel confident and comfortable with 1980. Everything that I'm looking at actually makes me more comfortable with that. And I think Brookhaven certainly needs to get on board with their record retrieval, it will make it easier for them.

CHAIR BEACH: So everything that you've looked at, is that previous to the data dump, stuff that we have had access to, or is it stuff that you still --

MR. CALHOUN: The data dump is after, so it doesn't --

CHAIR BEACH: That is not making you uncomfortable.

MR. CALHOUN: Well, no, it's not making me uncomfortable, it's just from digging into this and writing my responses to

these questions, it's just, I feel like we've got the memos and things that say the process is in place.

We've got numbers that say, you know, monitor people if they have a potential. We've got, you know, I've got another memo that says if there's excess contamination, monitor these people.

I've got memos that show that somebody, because they had a high external dose, we did a whole body count on them.

So, it seems like they were very attentive in what they did and the whole records retrieval thing is what we have to evaluate.

And that's why, prior to 1980, I just, you know, I can't say with as much confidence that we have all of the records available for those individuals, as I can after.

CHAIR BEACH: Well, and I read those same memos and I do agree they said we

have to centralize the records in October, and I'm not clear that two months later it was actually accomplished.

I think the only way that I can evaluate that, is when somebody is supposed to get a whole body count, and they say this person has to get a whole body count. If I can find that whole body count, I've got it.

It doesn't matter if they were centralized or not. If I'm getting the data that I need to get, that's what's important.

MR. FITZGERALD: Yes, I think one thing we have to do is separate the commentary from the time from what you're doing in terms of empirically establishing that you have retrievability.

Because I read the memos, you know, I've looked at some of the documentation and it sort of suggests that things were moving in a good direction, that they got it.

But, as far as whether that actually manifested itself, you know, actual

adequate records that can be used, I don't know if you can make that leap.

But the retrievability testing that you're doing I think is probably the only avenue that's left to you. The concern I have is that, it's empirical.

I mean it's sort of saying, okay, you know, I've picked 1980 because, you know, the Gestalt of all these documents seems to suggest that was as good as any date.

And I've, like we were talking to interviewees and I said, well, what about '79? What about '82? And they're saying, oh, that sounds just as good, too.

So, you know, but you know, the stakes are pretty high by drawing that line in terms of claimants and what not. And so I think the care that must be taken is okay.

If empirical, given the state of records, is what you've got, then I'd certainly be interested in the ongoing experience with the claims that are going in

on one hand, and also trying to pin down better, you know, Kathy mentioned when they were transitioning from paper records to electronic records.

They stopped filing things in the personnel files. And, based on the interviews we had, you know, data got lost just because it was disturbed by this handoff between one system and another.

They just didn't do that. Now, in the Evaluation Report, I mean that is actually highlighted. And it was portrayed a little softer in a sense that, from the '70s and '80s, limited electronic record keeping was, I'm reading from Page 49 of the ER.

Was started for some BNL monitoring data sets. BNL's decision to leave the electronically reported data stored as such, tresulted in a somewhat reduced use, in parentheses, and completeness of individual file folders.

That is, although electronically

reported data are available, hard copies of this information were not typically placed within the individual file folders, during this period.

So, you know, that's how, you know, that was characterized. But we talked to the HPs that had knowledge of that, they felt, yes, data got kind of lost in that shuffle.

And this is the early '80s. So even there we have a completeness question. So I think it comes back to retrievability is one tool and there's some questions about the completeness of the data, you know, quite apart from retrievability.

You can retrieve something but if you're retrieving an incomplete set of data, then you're going to be facing dose reconstruction on an incomplete set of data.

So I think the completeness issue comes into that. So retrievability is a process. Can you get something when you ask for it for an individual?

That answers one question but it doesn't answer all the questions. It says, you know, are you retrieving something that is, in fact, adequate. And that part of it I think we still have to go back to the records, themselves, and try to establish how complete they are.

MR. CALHOUN: That's a tough question. I didn't say it's complete.

MR. FITZGERALD: It's a tough question.

MR. CALHOUN: But I mean even today, even today --

MR. FITZGERALD: It is, but Grady, I'll concede, but Brookhaven, Brookhaven, you know, we know that is a big question because as of two years ago, they had no idea what records they had and whether they could, in fact, get those records in one place.

And maybe it's a little better now, I haven't talked with them in about a year and a half on that question.

But, think about it for a second. They had no idea what records they might have. And they were in the process of trying to figure out by knocking on doors and going --

MR. CALHOUN: Oh, I agree, I agree.

MR. FITZGERALD: So, in those circumstances, we have to attempt an answer.

MR. CALHOUN: Sure.

MR. FITZGERALD: Because if the answer is we still don't know, then I think the Work Group has to grapple with that. And if we don't, if DOE and Brookhaven doesn't really know and it is the best they can do, is that good enough?

I think that judgment still has to be made. And, you know, I think everything has been done from your part, whether it's retrievability of documentation, but I think that last question is still hanging out there.

MR. CALHOUN: Well, one of the things that we can, at least I like to hang my head on, is you know, I'll go back to the fact

that, I do put a little credence on the memos and the interviews.

And I've got something that says we have a program, I've got people that agree we've got a program. I do the empirical review to see retrievability.

Now, we've also got some, I'll call them annual summaries, of the whole body counts and urinalysis and what not that was taken over, by year, over the years.

And you'll see that what happened is the urinalysis fell down to pretty low, with the exception of tritium. And the whole body counts kind of took over.

So, that follows exactly what we're seeing. So it kind of makes me think that, you know, we're getting the data from the '80s on, that exists.

You know, I was talking to you about this one earlier, is that I've got other annual reports that say, you know, in all of 1986, and they're for several different years,

there's been, you know, all bioassay results taken have been zero or less than, the result and the dose less than that required to be reported to the Department of Energy.

I mean all of them, for the entire site. So, we know that this was a pretty low dose site, but that's not the issue. The issue is were they monitoring people and can we get the records.

CHAIR BEACH: Ted, did you have something?

MR. KATZ: I just was thinking maybe a path forward. Because the conversation keeps washing back and forth between general and, you know, in other words, BNL as a monolith versus the specific operations.

And we know that it's different requirements for these different operations in these different facilities. So I just wondered whether you couldn't just take, say, as a sample, a sample of say eight or ten

operations where you know some folks, you would have concerns about exposure at those operations.

And then, so use those to drill down and then do the empirical testing for those operations and see, you know, can we for these workers, can we actually do a coworker?

Do we need to do coworker dose reconstruction, because we don't have the records. And, if so, how do we do it for those eight or ten operations so that you're then specifically getting at this issue because BNL is not a monolith.

And if you're just sort of sampling randomly, you know, 20 or 40 or 80 cases, but they cover every operation and everything, you're not getting very deep into answering the question for this project that occurred in this building.

You know, anybody who was involved with that, can we do that dose reconstruction?

MR. FITZGERALD: And that's kind of

what I'msuggesting. Is that whether NIOSH, Grady, was in a position to have sufficient records for those facilities in those time periods.

And I think your answer was it was still flooding in. And what I'd tell the Work Group is this is a work in progress. So we're kind of in an interesting position.

Most sites you sort of have the data and you're just trying to judge the accuracy of data. Here, it's not clear how adequate it is, because it's a moving target.

And what we're going by on the ER, you know, we kind of, we are focused on the Evaluation Report and going from there. The Evaluation Report singled out January 1st, 1980, based on a couple of memorandum and an empirical test sort of to corroborate those memorandum that was based on two out of two in 1980.

MR. CALHOUN: I don't have nothing to do with the ER, by the way, that was

afterwards.

MR. FITZGERALD: But, you know, I'm just saying that what you have, though, think about it for a second. And we're basing the threshold to decided when the SEC ends.

We're basing on a couple of memos and, you know, again, we can argue about interpretation, but beyond that, we're doing sort of empirical tests to see if there's any problem with picking 1980. But really 1980 was based on those couple of memos. So I'm just --

MR. KATZ: But all I'm saying, just, can I --

CHAIR BEACH: What I'd like to propose based on what you said, Ted, is SC&A generally does a data adequacy and completeness for all sites.

So, I would like the Work Group to decide if that is something we need to do here, as well. Which would take into account what you were saying earlier, Ted, I believe.

MEMBER CLAWSON: We've, this is Brad. We've always had to do that on the sites, because the information that's coming in is very sketchy anyway.

And as we have seen at numerous sites, and has been said, a lot of these, where they had a lot of scientists and stuff weren't even for it. Because they didn't want to mess with it.

DR. NETON: I would just maybe suggest that that might be jumping the gun a little bit because we still don't have a position on the table as how we're doing this.

MR. CALHOUN: Coworker -

DR. NETON: Coworker. And typically the data adequacy comes into play after NIOSH puts a position and says we believe the data are adequate, here's how we're doing it.

And SC&A would go out and evaluate the -- is it true, does it pass the sanity test.

MR. KATZ: But if you are a facility specific or project specific, I mean it seems like you already are doing dose reconstructions for folks.

I mean, so for a specific project of concern, you can look it, well have we done dose reconstructions and what are we finding now in terms of, you know, is there any indication that we're actually able to do, for that facility, for that project?

MR. CALHOUN: Exactly what, you know, we go into this thing, you know, when you just think about, you think okay and it's a facility like this. The significant internal exposure is going to come from the reactor facilities, from isotope separation, the accelerator facilities are not.

Okay, we're not going to have a significant internal exposure. That was also brought up in our interviews, the people said the same thing.

And what we find is that the

individuals who worked at the reactor facilities are much more likely to have whole body counts and urinalysis than the people who work at the accelerator facilities.

I remember that Ron actually asked a question during, I don't know why this one sticks in my brain, but asked a question during one of the interviews about isotope separation because it made medical isotopes there.

And that's kind of a, you know, there's a whole gambit of, I'll call them exotic, nuclides that were produced there during that process. And Ron asked the person, and said well what about people at the isotope separation facility?

And the response was, yes, we counted those people, I don't recall anybody ever being positive, and there were only about eight people doing it.

So we, based on what we would think the internal monitoring requirements and

practices would be, we kind of see that with the dosimetry that we're getting back from Brookhaven.

MR. KATZ: But so, anyway, I don't want to, I shouldn't even be spending your time with my questions. But my point was why not take a bunch of snapshots of facility's projects of concern and do whatever, bring to the table whatever there is on that.

Sort of wrestle down the question on a project or facility specific basis for a sample of these, because it seems like you need to do that to get comfort and to know that you actually can handle the cases that come in for that facility.

MR. FITZGERALD: Well, there's two questions really. Certainly it would need to be that way, just because that's the nature of the beast. At Brookhaven you'd have to do it facility-specific, time-specific.

Going back to Jim's comment, though, do we know whether we have a complete

set of records for Brookhaven. I mean I have to tell you a year and a half ago, they didn't have any idea.

So, you know, it's sort of the cart before the horse, to know if you can have that comfort level that you have what you're going to have.

I don't, maybe at this point you can make a conclusion that irregardless of whatever else they collect for the facility's time periods of concern, do you feel confident that there's enough there to propose an approach.

And I don't even know if you have claimants where, your missing dose where you would need yet. It sounds like it's low priority so that suggests that you don't really have, you know, you haven't deferred that many claimant cases where you are missing dose.

MR. CALHOUN: Right, in most cases when we have absolutely no dosimetry we assign

ambient.

MR. FITZGERALD: But is that decision based on the operations and time frame, where they were. So these are people that did obviously not work in the facility.

MR. CALHOUN: And for the most part, all the rad workers are going to have external dosimetry. You know, the issue is internal dosimetry.

MR. FITZGERALD: It's internal, right.

MR. CALHOUN: Yes.

MR. FITZGERALD: I'm just saying those workers, in terms of their claims, if they didn't have any data, at this point --

MR. CALHOUN: It's typically ambient internal dose.

MR. FITZGERALD: Even for the facilities where you have a, obviously, an exposure potential to internal?

MR. CALHOUN: I would have to make sure of that, I don't want to just jump out on

--

MR. FITZGERALD: But that's something, I would be interested in that question, because that's sort of raises the issue of is there a real, you know, sort of pragmatic need for a coworker model.

I would argue that applying ambient to somebody working in the HFBR or something, or whatever it is would questionable because they have a potential.

And you would want to assign the coworker to those people. But I don't know. I don't know the circumstances.

And that would be a good answer, at least to bring people up to speed on that. And then the second question gets to whether NIOSH can make a judgment as to what you have on hand as far as information.

Whether as Ted is pointing out, whether it's sufficient to feedback to us, you know, yes, we have enough information for the reactors that we feel comfortable, there's a

coworker approach that we can apply if somebody came in.

And we wouldn't assign him an ambient environmental, we would assign this and here's why. That would give us something to chew on and you might come back and say, but we don't really have a complete set of records for a different facility.

And we're going to have to sort of kick, you know, kick on Brookhaven to see if they have any possible other sources of information that would give us more information.

DR. NETON: That's not unlike the course we took at Los Alamos.

MR. FITZGERALD: Yes.

DR. NETON: Looking at the separate facilities and seeing, do we have data for the fission products are whatever it is, the accelerators or reactors -

MR. FITZGERALD: Right. This may be a hybrid what you're talking about. We're

saying, one, you know, what's the circumstance now because, what are you assigning for missing internal dose for those facilities in those time frames.

And even specifying for the Work Group what facilities you're going to count as ones where you have exposure potential to internal where a coworker dose would make sense.

Would it be helpful with the time periods and that way we can evaluate, you know, is everybody on board with what facilities and what time periods.

And then where do you have sufficient information that, you know, maybe the first feedback was, yes, we haven't constructed a coworker model, but we think we have enough that we could come up with something that would be plausible and we'll get that back.

But maybe for some other time periods at other facilities, not quite there

yet and we need to go back, iteratively and see if Brookhaven has anything else to offer.

And so that might be a way to move it forward without waiting for the whole shebang to be done, which is what I think you're suggesting.

CHAIR BEACH: So it sounds like this is a two-part, where Grady would have to come up with that report and then you would have to evaluate.

MR. FITZGERALD: Yes, I agree with, Jim. I mean, we have nothing to evaluate because I don't think they've had a chance to figure out, you know, if you were going to apply that, what time periods and facilities would you apply it and where do we stand as far as the status of information and records for Brookhaven.

And maybe have a load, maybe we're halfway there for, you know, the site, but there's still other information that hasn't been forwarded yet.

And my guess that's probably where everything stands. So it would be a two part. But if you've done dose reconstructions already and have assigned environmental ambient to individuals, as well as time periods where there's exposure potential, which is what I think Jim was talking about, exposure potential. Then I think we would question that.

CHAIR BEACH: Absolutely. And then the other part of that is going back to the DOE question and trying to retrieve those records from Brookhaven for the early '80s into the '90s.

And Joe had mentioned talking to Greg. I guess I'm wondering what the path forward is there.

MR. FITZGERALD: I just read that and that doesn't make any sense to me, you know, citing Privacy Act does not give --

MR. CALHOUN: What we were wanting to do was we were wanting to just get --

MR. FITZGERALD: Their index.

MR. CALHOUN: Yes, of all the workers and just do a study that way. And their lawyers some how wouldn't let us do that.

But they did let us do the study based on a memo, for other people who weren't claimants. And they said these, you know, we said we want these individuals.

I think the, and it doesn't make sense to me either. But I think the fact that they were, that we were asking for a certain, you know, Joe Fitzgerald, and not everybody who worked there, they were okay with.

MR. FITZGERALD: They're giving you the actual personnel records.

MR. CALHOUN: Right.

MR. FITZGERALD: So that, it doesn't make any sense, it's inconsistent. You can't hold back one from the other. I think maybe if pressed through Greg, that may go away and that would be to get a broad view.

CHAIR BEACH: So we've also talked about an individual, who I won't name, that was a year and a half ago gathering up and looking at data from all the locations.

Is it possible to go back and talk to that individual and see how it's coming? How that data retrieval, based on his work, is going?

MR. CALHOUN: Do I know this person?

CHAIR BEACH: I don't think you interviewed him, I think --

MR. FITZGERALD: We interviewed him but you make a point that there's several people that are actually going around. Now this individual sounded like he was on point to figure out who has what.

This was two years ago and I have his name. But, that would be a starting point.

MR. CALHOUN: It's a BNL person?

MR. FITZGERALD: Yes.

MR. CALHOUN: Okay.

CHAIR BEACH: So is that a starting point for SC&A to go follow up with that individual since you did the original interview?

MR. FITZGERALD: No, I think this is part and parcel to this other question about getting their index or spreadsheet and, you know, where things stand.

I think that was what they were using to track what they were collecting. And this individual was actually using that.

So I think it's part of that one where if we can gain access to the index or the spreadsheet and we certainly would also want to talk to this individual again and find out where things stand.

And if they sort of, you know, stopped the exercise, I'm wondering about that. Whether they've done all they can do, it's been two or three years and, you know, this is it.

And that would be helpful to know as well, that anything more would have to come from us saying what about this facility, look for that, be more specific.

If the broader effort on their part may have stopped.

MR. CALHOUN: Yes, our thought, at the time, and I don't know if we determined they didn't have it, but I don't think we ever believed that they had a comprehensive list of everybody who was ever monitored.

MR. FITZGERALD: No.

MR. CALHOUN: What our thought was, was we want a list of people who worked at BLIP for these different time periods.

And then we were going to see what kind of bioassay was done. That was what we wanted to do.

MR. FITZGERALD: Yes, that makes a lot of sense. Because then you have a baseline of all the employees that would have been potentially exposed and you could

crosswalk that, as opposed to using memo which, again, my concern about memos is that might be a subset of the broader population that was potentially exposed. It might give you a different answer.

MR. ADLER: Joe, this is Tim. I think that notion may be erroneous. I think that, as we talked about before, there was no real set internal bioassay program at the site.

I think that the requests typically were done by memos and there really would be nothing special or unusual about that.

MR. FITZGERALD: No, I guess I was thinking more about those programs where you had routine bioassay, because you had a chronic source term.

MR. ADLER: There might be one memo covering a longer time period or something like that, but I just don't think there's anything usual or special about these memos, and they compromises their usefulness as far

as determining retrievability.

And I'd also argue they determine completeness, completeness, I don't know how.

MR. FITZGERALD: Well, you know, that's another thing that we can validate by getting to these employee lists and what have you, because the memos by themselves I don't think we can surmise is the universe of people that were bioassayed. I think --

MR. ADLER: They're just the ones that we happened --

MR. FITZGERALD: You happened to have them. I mean, if you found more memos, it doesn't mean you have more people that were bioassayed, it just means that you have some more record that you can track.

So, yes, I think it represents a subset of everybody that was bioassayed. It's useful for operations, but I think it's necessarily useful to establish the monitored population.

I think going back to, going back

to Brookhaven and seeing what their employee lists were for BLIP and for the reactor. I mean that would, to me, would be a strong baseline of who was at that facility in what time frame and that would be a comparison point, I think.

MR. ADLER: Sure.

CHAIR BEACH: Grady, I'm looking at an interview that was done on May 19th, and there was a question asked from SC&A. Is there a database with incidents listed?

And the interviewee responded that there is a radiological footprint project which documents historical radiological issues in a spreadsheet.

The information was gathered to use for D&D and it contained historic spills and other contamination incidents. It says here toward the end that NIOSH had asked for this database and were told that they could not have it.

This was a management decision, and

it says there are 100 buildings in the database. And it doesn't say who in NIOSH asked for, but it seems like that would be a document that would be interesting for us to try to locate. And I have the interview here to give you.

MR. CALHOUN: Yes, I'll follow up on that. I don't know of that, I don't know of that interaction.

CHAIR BEACH: Yes, so I'm not sure, you know, other than that I thought it was something we should follow up.

MR. FITZGERALD: You know, as I recall, I think they had a lot to do with maybe some of the D&D that was being considered toward the '90s, and they were trying to go back and figure out, like a lot of other sites. You know, what was handled in what locations.

MR. CALHOUN: Can we take a wrecking ball to this or do we need to save it.

MR. FITZGERALD: Well, it's sort of the notion if we go in, what were some sources that we might be able to get. So, it will be a useful thing to find.

We didn't find it when we were doing the Site Profile.

CHAIR BEACH: It reminded me of some of the work they did for Mound, to kind of blueprint the different facilities. That was just one thing I had.

How are we doing on, as far as, it looks like we've covered A.

MR. CALHOUN: I didn't really finish B.

CHAIR BEACH: No, we never started, actually.

MR. CALHOUN: Well, I've gone over the bullets time and time again on that. But I can go through what I found when I looked at the cases.

CHAIR BEACH: Okay.

MR. CALHOUN: Because that was one

of the, one of the specific tasks that I had was to look at the cases that we had in house and see, you know, what I could determine from the monitoring, you know, if they could have been monitored or should have been monitored, what not.

Obviously I only looked at those cases for which he had received responses. I only looked at those cases with employment after 1980.

Because prior to 1980, I wasn't all that concerned. I looked at the CATIs and this goes back to the whole retrievability thing.

And, at least in my mind, the best way to determine if people were monitored was, they were asked in their CATIs if they had whole body counts or if they had any kind of bioassay.

There were eight people that reported that they had had at least one bioassay. We received five either whole body

counts or urinalysis.

Urinalysis and whole body counts, four of those, or five of those individuals. Two of those people worked before and after 1980, so I really couldn't get a good grip on, you know, whether they, if they were monitored prior to 1980, we didn't have the information.

The only person that I, that was really a hold out, was one individual who worked as a design engineer. He worked 12 months in 1985 and 1986, in the Van De Graaff Building.

Not a building you would expect to have bioassay. He didn't wear external, he had no external badge, he reported that, but he did leave a urine sample.

Although I can't be 100 percent certain, my guess is the urine sample was for medical analysis.

So, that's what we found from looking at the in case documents. No doubt, I've received more since I did this evaluation

from Brookhaven.

I don't know how many more I've received since then.

MR. FITZGERALD: Would it be possible to, you know, since the sample size, I guess, for the after '80, two of three, before or after January 1st.

Are you suggesting we might be able to increase that sample?

MR. CALHOUN: Yes, maybe. I'd have to look at it --

MR. FITZGERALD: That would be, you know, I think, you know --

MR. CALHOUN: It's all about what we've received since I did this.

MR. FITZGERALD: Right, I mean --

MR. CALHOUN: There's a bunch. I mean they're, I think they're outstanding on like 50.

MR. FITZGERALD: Yes, there's some downside to the empirical approach but at least it would provide further corroboration.

MR. CALHOUN: Right.

MR. FITZGERALD: And if it were 46 out of 46, as opposed to two out of three or something, that would be a bit more compelling.

MR. CALHOUN: That's just all a head, that's all you're going to go with.

CHAIR BEACH: So that's an action?

MR. CALHOUN: Yes, I'll try to update that is what I'll do. Because I've looked at, and I've got a spreadsheet somewhere that shows the last one I looked at.

CHAIR BEACH: And are you capturing your action items?

MR. CALHOUN: I am but we'll discuss them at the end here, I would hope, and we can kind of try to, try to sort of agree.

MR. FITZGERALD: Now I think it would helpful for, I guess, 1980 through, I don't know, five or six years beyond that.

MR. CALHOUN: I just looked at

anything past 1980. It could have been 19, it could have been 2005.

MR. FITZGERALD: Okay.

MR. CALHOUN: Anything past '80, I looked at.

MR. FITZGERALD: All right.

DR. BUCHANAN: Okay, this is Ron with SC&A, just before we move on, Grady, on the side that had bioassay, and when you do more, do you recall like they said you had bioassay, so you looked, did you look and see what years they worked at that facility and then how many bioassays they had --

MR. CALHOUN: Yes.

DR. BUCHANAN: One per year or they had one bioassay and you counted that as sufficient? Or how did you say, yes, they've bioassay.

MR. CALHOUN: If the person reported that they had participated in a urinalysis or whole body count and they had one, then I said that yes they did.

DR. BUCHANAN: Okay, you know, when you go back and do this again on these other cases that you've received information on, it would be helpful if you kind of categorize.

Say, okay, this person worked there five years and he had one bioassay or he worked there five years and he had five bioassays.

A number of bioassays per year worked with the helpful information. That's contained in the data you received.

MR. CALHOUN: Okay.

MS. ROBERTSON-DEMERS: This is Kathy DeMers, can I make an additional requests?

CHAIR BEACH: Yes.

MS. ROBERTSON-DEMERS: When you break it out, can you break it out by radionuclide?

MR. CALHOUN: Not if it's a whole body count. If it's a urinalysis, you know, I could. I'll look at that, I'm not going to

promise.

MS. ROBERTSON-DEMERS: Okay.

CHAIR BEACH: Anything else on that particular item. We've already covered C, I think, unless there's more information --

MR. CALHOUN: Well, that's just a sad story that, the story, and I just sent him another email today, is just that I've pinged him. Routinely we meet with him every couple of weeks.

MR. FITZGERALD: It sounds like we may have to elevate that a little bit.

MR. CALHOUN: So, I do not have the procedure, officially. They produce them all DOE sites, their search procedure criteria, whatever process. And BNL has not done that.

CHAIR BEACH: Okay, and then do you want to go over D?

MR. CALHOUN: And D, you know, I don't know if we want to go through those. Basically, the general opinion is nobody thought that 1980 was ridiculous.

Nobody said that January 1st, 1980, was the date. There's some other neutron issues that, you know, Ron was more involved with in the discussions, but, so I don't really have much more on D and what's written there and what we've spoken about.

MR. FITZGERALD: Yes, we, I think it was our joint hope that somebody would raise their hand, you know, and say, yes, I've worked with the individual and was aware of the memo and, yes, 1980 was the big time.

And that didn't happen but, again, given the time frame I wasn't too shocked and so it was an attempt to try to provide more corroboration.

CHAIR BEACH: One of the questions I wrote down was where are the log books now? Have you had any access to any of those log books from the earlier --

MR. CALHOUN: The whole body counting log books?

CHAIR BEACH: Any of them, the

urinalysis, the whole body?

MR. CALHOUN: I believe we have. I think most of those are prior to '80, though. I don't know, Tim, if you have any additional information on that, but I am fairly certain I saw some of those yesterday, when I was going --

MR. ADLER: Yes, we have some of those.

CHAIR BEACH: Well, there's one interviewee on your second page of interviewees, I won't mention his name. Stated that records were kept in log books from about '78 to '82, so I was wondering if those later log books are available. I don't know what dates you have.

MR. CALHOUN: I don't know that, I'd have to see which ones I have. But I'm fairly certain I saw some yesterday in the SRDB. And we will, you know, every time that we have something like that, we try to go through the process of linking that

information.

It's very laborious, because you've got to go over it every time because you don't have, every month or so or half year to determine what your claimant, you know, your claimant's come in.

You can't link it to somebody you don't have.

MS. ROBERTSON-DEMERS: Josie, this is Kathy DeMers. Would you consider sending us interviews for review and action items?

CHAIR BEACH: Are you talking about the later ones or the earlier ones, Kathy?

MS. ROBERTSON-DEMERS: The ones we did in September and October.

CHAIR BEACH: Okay, so you want us to give you those interviews for review, is that what you're asking?

MS. ROBERTSON-DEMERS: No. The interviews need to be sent out to the interviewee.

CHAIR BEACH: Correct, and that was

one of my questions I was going to ask, if that had been done.

MS. ROBERTSON-DEMERS: I just got the phone numbers yesterday from Grady.

CHAIR BEACH: Okay. So I think that is, has to happen to substantiate, to make sure that what was said is what they actually said. So, yes, if that's in agreement to everybody that that be done.

I certainly think that's a good call. Thanks, Kathy, for reminding me.

MS. ROBERTSON-DEMERS: Okay.

CHAIR BEACH: Anything else on this? Any other follow-up interviews that came from that, that we need to do?

MR. CALHOUN: There was one individual we couldn't get a hold of. We tried a couple times and he didn't seem interested. But I know SC&A reviewed him, interviewed him earlier.

MR. FITZGERALD: Yes, we did. And, again, I think the information he provided

tended to be more on the environmental side, and he was at a senior level and had less knowledge of the specific things that were going on.

Although, I guess I held out the hope he would be able to speak to something as fundamental as the centralized record, but he didn't have any firsthand knowledge.

CHAIR BEACH: Excuse me, sorry. Gen or Andy, do you have any other follow-ups for the interviewees or questions?

MEMBER ROESSLER: Josie, this is Gen, I probably missed something when I was unmuting. Did you ask if we have any additional questions?

CHAIR BEACH: Questions or any follow-up interviews you'd like to see take place?

MEMBER ROESSLER: I don't think that we're going to get any follow-up. I agree with a lot of the things people have said here today. And, of course, the one

thing with those interviews that we did, I was hoping because of the red flag that came from the [identifying information redacted] memo, that something very simple would follow.

Somebody would lead us to a printed memo that would say, yes, here's what happened. And a certain date and that would simplify things.

I don't think that's going to be coming so I appreciate all of the effort that went into those interviews. But I think we probably are at a dead end on that.

MEMBER ANDERSON: This Andy, yes, I was hoping, I was wishful to, but I would agree, I think we've chased the best we can and I think the interviews were helpful, but unfortunately they didn't turn up what we really needed.

CHAIR BEACH: Okay, thank you. So anything else before we go into the action items and the path forward?

DR. BUCHANAN: Yes, this is Ron

with SC&A. I wanted to say that one thing that's not being addressed, I think clearly, and this is, has to do with your next step, the action item path forward, is that I think something that would be helpful and almost necessary, is for us to get a handle on what the data systems were and how they were handed off and to where they're at today. And maybe this has been lightly touched on, but I think we ought to decide whether we should take definitely action item steps.

For example, how were the handwritten data transport to the first electronic data system to the second and to today.

Because that would answer some questions if we see that this was done faithfully then that would give us a level of comfort that we don't have now.

If we find out we don't know or they weren't verified as they were transformed, what databases are out there with

that, maybe they were transferred but maybe that database is stuck in the basement some place, so we can't get to it, well then that sends up a red flag.

So I would suggest that as a main ingredient in valuating this, is to have someone look at how the databases were transferred and verified through the years.

CHAIR BEACH: Yes, let me understand this. So we went from paper to electronic and then we went to electronic and then again to another electronic system?

Was that the history of it, that you recall?

DR. BUCHANAN: Yes, and I kind of laid that out, somewhat, in my July report in the appendix in the back.

CHAIR BEACH: Right.

DR. BUCHANAN: But this is just what I scratched together from documents I had. This really wasn't, you know, a BNL's sanctified type -- information.

And so I think we need to be able to link these and see if they were verified when they went from one place to another and just see if that sheds any light on all the questions we have here.

MR. FITZGERALD: Yes, and we did touch upon, you know, one artifact of that whole process which was the feedback from the HPs at, in the early '80s, when they went from paper to the electronic system.

There was, you know, the completeness issue where not everything that was being collected was filed in the personnel folders.

So there was a gap there. It was not really well defined as to, you know, what the implications would be as far as having complete records.

But it was just noted that the records were probably incomplete, to some degree, because of that transition. So that sort of argues, I think, for what Ron is

saying.

That we don't really know what the implications are for completeness, and I guess I had originally thought we would address that as part of data integrity.

You know, the V&V, the validation verification part of it. But, again, I think that could be looked at separately from the usual completeness thing that would be focused on the coworker model.

So maybe that's something that SC&A could revisit with Brookhaven and look at the, look at this V&V, the data integrity question of transition between systems from 1980, forward.

It shouldn't be as hard as trying to do it in the prehistoric days. And I think there's still people there that were involved with it.

Now we touched on it, so we have a very broad outline, but we didn't really go any deeper than that. I'll leave it to Grady,

is that something that --

MR. CALHOUN: Yes, I don't know, I mean, we can certainly look at it. I think that what you're more likely to find, and this is just my opinion, is that you're going to find the actual paper records placed into their file, than you are somebody typing in a result, from a record from 1960 --

MR. FITZGERALD: You know, that's what I thought too, but we got exactly the opposite from the HPs and I thought it was a little bit hard to understand, but they're saying because they were switching over to the electronic system, they stopped being so religious about putting the paper in the files. And that actually led to a gap --

MR. ADLER: This is Tim. I think that maybe getting misinterpreted, I'm not sure that, I think maybe, at least the impression I got was there was no paper to put in the files.

And then, as Grady said, there's

only a transition of data from one format to another over time. If it was generating paper, it's still pretty much in paper, and that's what I've seen.

And BNL has made very little effort to go back, as some sites have, and get these things electronically entered and stored. If it was paper, it is paper. If it was a memo, it's still a memo.

MR. FITZGERALD: Again, Tim, I'm just going by what we were told by the personnel that were involved. And maybe they didn't choose their words as carefully as they needed to, but they basically said, and this is in the interview notes again.

From the 1970s to 1980s, there was a transition to electronic record keeping. Unfortunately the personnel folder became increasingly incomplete during this time frame and data is missing.

From the 1990s to the present there is a more systematic complete electronic based

record keeping. Now that doesn't obviate your interpretation either.

MR. ADLER: Right --

MR. FITZGERALD: It just could be that they relied on electronic systems so the personnel folders were missing pieces, but it didn't mean anything.

I think what we're saying, maybe we can put that to bed, and just know that during these transitions, the integrity of the information was preserved.

And that's something that maybe is part of --

MR. CALHOUN: We can look at it, I've got it written down here.

MR. FITZGERALD: All right.

DR. BUCHANAN: This is Ron, again. What I'm referring to is Page 35 of our July 1st, 2010 reply, Attachment B. And that is very, you know, a very preliminary look at the basic data systems and that's what I would like to see expanded upon, so that the Work

Group and us and NIOSH can have a feel for actually what was done when, and how much confidence can we have in the data that they give us today.

CHAIR BEACH: Okay, so I'm getting a little bit of mixed signals, because I know SC&A said that they would look at that, and Grady just said you wrote that down.

Are you going to take that as an action to do that and then --

MR. CALHOUN: I can ask. What I can do is I can try to find something or interview some people. I don't how else I'd be able to do that.

MR. FITZGERALD: Well, I think it looks like, you know, we had looked at the same documentation and got sort of the same feedback.

What Tim is saying doesn't, you know, contradict what we're saying, it's just sort of the interpretation of what it means and maybe we can pin that down better.

Does it mean that they still had a complete record, it's just that they were no longer using those personnel files.

MR. CALHOUN: Yes, I'll try to find that out.

MR. FITZGERALD: And then going forward, I think Ron's point is that, you know, and he went through some effort to go ahead and spreadsheet the systems. If one can be a little more specific about 1980 and beyond period, as to what that means, then I think that would answer the question.

MR. CALHOUN: When new databases were started, did we transcribe the data and, if so, was it verified.

CHAIR BEACH: Well, it seems like the 1982, I think the last one came on-line in 2002.

DR. BUCHANAN: Right, HBRS came on in 2002. This is Ron. HBRS was started in '95, and external was entered on it, somewhere in the mid '90s.

Then the internal was entered in 2002, which beginning, when they started entering all the bioassay records from internal into the HBRS, and I understand that some of the older legacy electronic systems are being entered in, but I don't know to what percent of completeness that has been done.

And I don't know if the old electronic systems are all supported. Are they able to retrieve all that information, from the old electronic system? That still is an item that's hanging in the air.

MR. CALHOUN: I'll see if we can do that. What I have written down here, was data transcribed from one system to another. And if it was, was it verified.

MR. FITZGERALD: Right, I mean you know, I think trying to avoid having too many people come at Brookhaven from too many different directions.

MR. CALHOUN: Yes, they don't like that.

MR. FITZGERALD: They don't like that. So, I'd rather have one contact on this stuff and then maybe go from there.

MR. CALHOUN: Once we get the list of the go dos together, we can decide what to do and maybe we can tag team.

MR. FITZGERALD: Well, I'm just saying we'd be glad to help, glad to take something off. I just don't want to get Brookhaven agitated.

CHAIR BEACH: Correct.

MR. CALHOUN: Or else they'll stop giving us records.

(Laughter.)

MEMBER CLAWSON: Grady, you talked about earlier, this is Brad. That you just received a bunch more, a capture whatever.

MR. CALHOUN: I don't want to say just. I'll it happened in the last eight or nine months probably. And I've written this in here just to kind of tell you what, I can tell you what it was.

It was a data dump and, where was it. I got a bunch here, let's see. Where is it? Oh, here it is. BNL has provided data sets including in vivo results and tritium urinalysis for later years.

Tritium data contains 11,000 entries from 1995, to 2003. In vivo data set contains more than 2,800 individual whole body counts from 1999, to 2001.

MEMBER CLAWSON: I'm just, one of my pet peeves is there's a lot, this is continuously going on stuff and I just want to make sure that when this comes in we kind of have a running file of what it is and where it's at.

This one I've got in Pantex, we've got new data in and it goes into the O: drive and then all you have is a number.

MR. CALHOUN: It would be cool if it had a date entered.

MEMBER CLAWSON: Or what I've been requesting is, there's just a little folder up

at the front, as stuff came in. Just, you know, this came in or whatever.

And they have been good enough to sometimes put PDF files and so forth like that. But that's another issue. I just wanted to make sure that we were on top of the information as it came in.

Because this is a continuous thing and it's at every site. Just kind of a data capture. This one sounds like it will just be one, one file that will be pretty easy to find.

MR. CALHOUN: I assume that's SRDB, is that right, Tim?

MR. ADLER: Yes.

MEMBER CLAWSON: So it's just in one folder then and we can review it from there.

MR. ADLER: In the SRDB it ends up being a link for that spreadsheet.

MEMBER CLAWSON: Okay.

MR. ADLER: And I think your SRDB

may be a little bit different than ours, so I can't guarantee how that will work for you.

MR. CALHOUN: It shouldn't be, but let's, if I can get the, if you can give me that number, Tim, after the meeting, I'll forward that to Brad.

MR. ADLER: Okay.

CHAIR BEACH: And just forward it to the Work Group, if you don't mind. Okay, anything else before we go into the action items and future plans?

(No response.)

CHAIR BEACH: Who would like to start with their action, there's a lot of action items here, so Grady, why don't you go ahead?

MR. CALHOUN: Yes, this is just from the neutron part. Let's see, what I have is need to find out if BNL did any fading corrections prior to issuing the dose of record.

And, let's see, Ron looked at,

okay, I need to look at those 16 DRs that were completed after the revised TBD and look at the angular dependence correction factors.

And part of that is Ron is going to send me those numbers, so I know which ones to look at. I guess we're going to look for, I guess we'll try to look for the Holy Grail again.

Maybe a memorandum discussing how, a memorandum discussing how to assign dose, with the two different dosimetries.

MR. FITZGERALD: Well, I guess whether they assigned dose and how they did it.

MR. CALHOUN: Yes. Maybe a discussion of the variance over range to see if it really even matters. Okay, so that's one, two, three, four, that's all neutrons right now.

Leo Faust is looking for the Piesch memo. Okay, that's all I have for neutrons for me.

CHAIR BEACH: Okay, and I believe SC&A just had the one action item to send you the case studies. Does anybody have anything else for neutrons?

(No response.)

CHAIR BEACH: And then again these will be typed up and sent out within the next couple of days. All right.

MR. CALHOUN: Okay, let's see, for internal data, okay what I'm going to do is I'm going to provide Kathy, or I guess I could provide it to everybody, the two data points for 1980, that I have, that I found for the table in Item Number 1.

I'm going to provide a status of the BNL requests for data on case-specific basis. I'm kind of, this one is kind of general, but we're going to kind of look at where we stand on the coworker model.

CHAIR BEACH: Is that going to be in the form of like a memo to us or a White Paper?

MR. CALHOUN: Just let me, just leave it at that right now, so I can figure out how my response is going to be. I've got to look and see where we are before I respond.

CHAIR BEACH: Okay.

MR. CALHOUN: So how I deliver it to you is not as important as that I do. I'm going to get Kathy case IDs for the eight CATIs. Let's see, that's with the coworker.

Do we have enough data for coworker by facility? That's part of that. I'm going to update the review of the in-house study that I did, based on any new information.

CHAIR BEACH: And add cases possibly to that --

MR. CALHOUN: Yes, that's it. Those will be the cases, the claimant's that we have received and I'm looking at the dose -

MR. KATZ: Can we go back a second to the "by facility" part of that coworker question. Do you guys need to select, some

how, a sample of, sort of, higher concern facilities because you can't do it for the whole BNL. I mean, you're just, right?

MR. CALHOUN: Yes, but we're, I think, it's a big look. This is not a trivial go do, you know, to go see what --

MR. KATZ: I'm sure.

MR. CALHOUN: You know, what we have. So --

MR. KATZ: But that's part of the reason for also narrowing the --

CHAIR BEACH: Right.

MR. CALHOUN: But it certainly, we would certainly look for, we would certainly look a the high potential facilities.

You know, I'd look at the HBFR or BLIP, maybe. But I wouldn't look as much at the reactor facilities because those are, or not reactor, accelerator facilities because those are going to be external.

MR. FITZGERALD: Well, there's, you know, that is helpful. I think it is a multi-

step thing and it's a big task. I mean I think the first step is, you know, what is the, what are the facilities and time periods?

MR. CALHOUN: And that, yes, because that's going to involve talking to BNL.

MR. FITZGERALD: Right, and then I think the Work Group would want to see what the judgment is, early judgment and decide it's comfortable with that judgment.

Then we go from there to see, you know, what's the completeness of the information.

MR. KATZ: So then the first step, Joe is saying, is actually just identify a candidate?

MR. FITZGERALD: Right, and this hasn't been a high priority because there hasn't been a demand. But, nonetheless, if it's going to be a higher priority then it's going to be a big task.

MR. CALHOUN: And most likely it's

going to be HBFR, but --

MR. FITZGERALD: Yes, your right, I think it probably in that time frame, no doubt. But the other thing is what are you doing now with active claims coming in, whether, just sort of a little bit of housekeeping as far as, you know, okay, would any of those be affected by your categorization that, you know, you're assigning ambient environmental but clearly if they fall within the time periods of facilities that would argue for a coworker assignment.

And I think you were going to advise, anybody at all falls in there.

MR. CALHOUN: I'll write that down. What are we doing now for coworker internal --

MR. FITZGERALD: For those facilities --

MR. CALHOUN: At high --

MR. FITZGERALD: But I agree before

you can even answer that question you have to decide what facilities and what time.

MR. CALHOUN: Right.

MR. FITZGERALD: Then you know, you know, what people.

MR. CALHOUN: And then the last one I have is, was data transcribed from one system to another and was it verified, if so.

CHAIR BEACH: Okay, then I had one that I wanted you to go see if you could find that radiological footprint?

MR. CALHOUN: Yes, that's good.

CHAIR BEACH: Here, I'll hand this over to you. It's kind of the third paragraph down there.

MR. CALHOUN: Oh, you've got notes on this, let me just write down then, I guess.

CHAIR BEACH: Well, or write down the interview, you can go find it, it's out on the O: drive.

MR. CALHOUN: Okay.

MR. FITZGERALD: And that goes hand

in hand with obtaining the information that has been kept back on a Privacy Act basis which is the, what Brookhaven has compiled as far as their records.

CHAIR BEACH: It looks like they did some of that work for you.

MR. FITZGERALD: Then we have the action to send interviews out to the interviewees, I guess that was the last thing.

CHAIR BEACH: Yes, that was.

DR. BUCHANAN: This is Ron Buchanan, I couldn't see what was going on. What was that last one you handed Grady?

CHAIR BEACH: Sorry, Ron, that was the May 19th interview that Kathy and Joe did, and there was a question, one of the interviewees talked about a list that was put together.

And NIOSH had requested that and was denied, so I just asked Grady if he would go back out and find that list.

DR. BUCHANAN: What was the list

of?

CHAIR BEACH: It was a list of historical documents, it was a spreadsheet that they had completed for D&D work. It was gathered for use and for D&D.

MR. CALHOUN: Incident driven wasn't it, didn't you say it was incident?

CHAIR BEACH: It was called a Radiological Footprint Project and it documented historical radiological issues in a spreadsheet.

DR. BUCHANAN: Okay, thank you.

CHAIR BEACH: And I don't believe anybody has it, it's at Brookhaven.

MR. FITZGERALD: Yes, it's the kind of, it's similar to what we saw at Mound, it's like the King Report. It's a baseline to guide D&D so they know what the source, potential sources might be at different facilities.

CHAIR BEACH: Well, one thing it said, some of the departments were more forthcoming than others, so it's not complete,

but it sounds like it's a good place to start, or at least look at.

Okay, is there anything else, Kathy or Ron, that we've missed in the action items?

MS. ROBERTSON-DEMERS: I can't think of any.

DR. BUCHANAN: No. Let's see. They did cover going back and looking at the database system and the fading.

I will send those 16 cases to Grady. Now, I want to clarify a statement. Six of those were Dose Reconstructed before the new TBD and ten after the new TBD.

CHAIR BEACH: Correct.

MR. KATZ: Right, that was understood, right. Thanks, Ron.

MR. CALHOUN: And all I need is just the numbers.

DR. BUCHANAN: Right.

CHAIR BEACH: And when you send things out, could you please send it out to the whole Work Group, for those of us that

want to track.

DR. BUCHANAN: Okay, sure will.

CHAIR BEACH: And then give me a time frame on when these lists of actions items will be typed up and sent back and forth and then out to the whole Work Group? What dokyou think?

MR. CALHOUN: I can get mine done by end of the day Monday.

CHAIR BEACH: Okay. And then out to the Work Group maybe Tuesday or Wednesday after we've both looked at them?

MR. FITZGERALD: Yes, it will be sometime mid next week.

CHAIR BEACH: Okay, and then how about time line for the next Work Group meeting. I know I'm pushing here, it's a stretch.

Because I know NIOSH has got quite a few things.

MR. CALHOUN: Gosh, I would think that I'm going to need a few months, at least.

MR. KATZ: I would guess.

CHAIR BEACH: Well, you're going to need a couple of months, then I know SC&A will have to respond or review some of that?

MR. FITZGERALD: Yes, I would say, to have a profitable meeting, it would be helpful to have a meaningful, even a technical call if necessary, to make sure that, you know, we understand where the analysis has gone on, and particularly on the coworkers because that's a pretty big piece of this.

CHAIR BEACH: So possibly we'd need a technical call and then --

MR. FITZGERALD: It will be a few months. I mean I would guess, maybe sometime early May.

MR. KATZ: Okay, which -- do you guys want to pick a date now?

CHAIR BEACH: I think we should pick.

MR. KATZ: Since we're all together. If we could just shoot for a date

in May. It can always be changed.

MR. CALHOUN: I'm out of town the 13th to the 20th.

CHAIR BEACH: Well we have a LANL meeting on the second here, so the third would be a nice time for those of us that are already going to be here, if that's still available.

MR. KATZ: And so Andy and Gen, why don't you look at your calendars, too.

MEMBER ROESSLER: I'm looking, I'm free on the third.

MR. KATZ: That's good for Gen.

MEMBER ANDERSON: What dates again?

MR. KATZ: How is May 3rd for you, Gen, I mean, Andy?

MEMBER ANDERSON: May 3rd looks good.

MR. KATZ: Okay. And Brad?

MEMBER ANDERSON: Must be something going on bad then.

(Laughter.)

MR. KATZ: So Brad is nodding yes, too.

MEMBER CLAWSON: Yes.

MEMBER ANDERSON: Most definitely a yes.

MR. KATZ: Okay, why don't we --

MEMBER ANDERSON: What was the other date?

MR. KATZ: That's the only date we're talking about right now. It sounds like that's a good date for everyone.

MEMBER ANDERSON: Okay.

MR. KATZ: Okay, and then we'll just check in closer to time, Grady, about, and Joe, about readiness.

MEMBER ANDERSON: So we need a whole day?

MR. KATZ: Yes, let's plan on it.

CHAIR BEACH: Yes.

MEMBER ANDERSON: Okay, that'sfine. Then I'll plan to come in person.

CHAIR BEACH: Oh, nice.

MR. CALHOUN: Great, always good to see you, Andy.

MEMBER ANDERSON: Yes, right. And eat at that wonderful --

MR. KATZ: Absolutely.

MEMBER ANDERSON: Restaurant in the hotel.

MR. KATZ: Absolutely.

MEMBER ANDERSON: I think I've had everything on their menu.

MR. KATZ: Well, Andy, you're not even close to the rest of us.

MEMBER ANDERSON: I'm not even close, I know.

MR. KATZ: The record some of us have with that nutritional value.

CHAIR BEACH: And we haven't heard from --

MEMBER ANDERSON: Okay, I'll mark down the date, the 3rd it is.

MR. CALHOUN: How about you, Tim, and your group?

MR. ADLER: I guess I'm open at this point.

MR. CALHOUN: That's what I like to hear.

CHAIR BEACH: Okay, great meeting everybody, thank you and we're adjourned.

(Whereupon, the above-entitled matter went off the record at 12:04 p.m.)

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