U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL
SAFETY AND HEALTH

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ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

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WORK GROUP ON PANTEX PLANT

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TUESDAY
MAY 3, 2011

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

PRESENT:

BRADLEY P. CLAWSON, Chairman
JOSIE BEACH, Member
ROBERT W. PRESLEY, Member
PHILLIP SCHOFIELD, Member

ALSO PRESENT:

TED KATZ, Designated Federal Official
ROBERT BISTLINE, SC&A*
RON BUCHANAN, SC&A*
MEL CHEW, ORAU Team*
JOE FITZGERALD, SC&A
STU HINNEFELD, DCAS
JENNY LIN, HHS
SARAH RAY*
BRYCE RICH, ORAU Team*
KATHY ROBERTSON-DEMERS, SC&A*
MARK ROLFES, DCAS

*Participating via telephone

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

(9:00 a.m.)

MR. KATZ: Good morning, everybody. This is the Advisory Board on Radiation and Worker Health, Pantex Work Group, and we're just getting started. We'll begin with roll call. If you're talking about a specific site, please speak to conflict of interest, and we'll begin with Board Members in the room.

CHAIRMAN CLAWSON: I'm Brad Clawson, Work Group Chair. No conflict on Pantex.

MEMBER BEACH: Josie Beach, Work Group Member, no conflicts with Pantex.

MEMBER SCHOFIELD: Phil Schofield, Work Group Member, no conflict, Pantex.

MEMBER PRESLEY: Robert Presley, Work Group Member, no conflict with Pantex.

MR. KATZ: And do we have any Board Members on the line?

(No response.)

MR. KATZ: Okay. NIOSH ORAU team in the room.

MR. HINNEFELD: This is Stu Hinnefeld with NIOSH. I don't have a conflict with Pantex.

MR. ROLFES: Mark Rolfes, NIOSH health physicist, no conflicts of interest.

MR. KATZ: NIOSH ORAU team on the line?

DR. CHEW: Mel Chew, no conflict with Pantex.

MR. KATZ: Welcome, Mel.

MR. RICH: Bryce Rich, ORAU team, no conflict.

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

MR. FITZGERALD: Joe Fitzgerald, no conflict.

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

DR. BISTLINE: Bob Bistline, no conflict with Pantex.

MR. KATZ: Welcome, Bob.

DR. BISTLINE: Thank you.

MR. FITZGERALD: I think Kathy will join --

MR. KATZ: Join us in a little bit? Okay.

MR. FITZGERALD: Shortly, yes.

MR. KATZ: Federal officials or contractors to the feds in the room?

MS. LIN: Jenny Lin, HHS.

MR. KATZ: And this is Ted Katz. I'm the Designated Federal Official for the Advisory Board. And on the line? Any federal officials, contractors to the feds?

(No response.)

MR. KATZ: Okay. We have no members of the public in the room. Do we have any members of the public who want to identify themselves on the line?

(No response.)

MR. KATZ: Okay. All's quiet right now. Then we're all set to go. I think everyone on the line knows the rules about

muting your phone, so nothing more to be said there. Brad, it's your agenda.

MS. ROBERTSON-DeMERS: Ted? This is Kathy DeMers, and I'm not conflicted.

MR. KATZ: Okay, thank you, Kathy. Welcome.

CHAIRMAN CLAWSON: Well, the agenda, I guess we're going to start off with the overview of the issues for the internal dose, and, is this in your hands, Joe, or Mark's?

MR. FITZGERALD: Well I, you know, I would leave it up to Mark and Bryce, if they want to capsule their piece. I mean, first of all, I thought it was a very thoughtful piece. It laid out things in a very deliberate way, and I don't know if you want to outline this point or just, you know.

I went ahead and wrote down something sort of akin to what you've done, because I think we're at the stage where there's some both philosophical as well as

assessment policy issues or call it what you may call it, for Pantex, and we can do that if you want. I mean it's up to you, because I think your March 10th paper was the last piece on Pantex.

So it's up to you, if you want to outline that first.

MR. ROLFES: That's correct. Yes, our latest response, as you indicated, was from March 10th, 2011, and basically, at our last Work Group meeting, you had identified, Joe Fitzgerald had identified, I guess, five or six key SEC issues that we tried to focus in on and respond to.

So this March 10th of 2011 response tries to address -- we've given, I guess, probably five introductory pages, and then tried to go into each specific question we have received and address each question. However, a lot of it ties together in the introductory portion.

We basically just went through an

introduction of the Pantex facilities operations, discussed you know, the time period that Pantex operations began. The early time period at Pantex, work was primarily involved in the casting, melting and machining of high explosives, which were then sent off-site to the Sandia National Laboratory for assembly.

Pantex wasn't really handling radioactive materials in those earlier days of operations, and that also corresponds with the number of people who were monitored for exposure to radiation as well. Then with the receipt of plutonium in late 1957-1958 time period, they constructed Gravel Gerties and also you can take a look at the number of individuals monitored at the site, and you see a drastic increase in the number of individuals who are being monitored for external dose, because the exposure potential increased during that time period.

You know, Pantex is a slightly

unique facility. It's a little bit different than all the other facilities that we have been talking about in the past. Pantex really didn't produce a radioactive material. They didn't have a foundry that produced uranium metal, for example.

They typically handled finished parts, and would assemble those parts into a final nuclear weapon that was sent to the military to be stockpiled. You know, during that time period as well, they would get some of those weapons back and do quality assurance testing and inspections of those weapons each year, to make sure that, you know, various parts functioned as appropriate, when needed, et cetera.

They would also take a look for surveillance concerns. They wanted to make sure that that weapon wasn't deteriorating, so that it would in fact, if needed, would be usable at the appropriate time.

I think I've given a brief

overview of Pantex operations from the beginning, and if you'd like to discuss specific, you know, specific concerns or approaches that we use for dose reconstruction, I'd be happy to go through those.

MR. FITZGERALD: Okay. You know, we're sort of in the tail end of the review, and what we're trying to do at this point is complete, I would say, document review in Germantown, and that was helpful. I guess the Work Group is scheduled in June.

We're trying to schedule one last trip to Pantex, which you know, obviously you all are invited from NIOSH, to frankly address a few loose ends that we have identified in the late stages of this assessment, and that we're trying to get that to happen. Hopefully, the next couple of months, we can get down there for one last review.

We're in the process of drafting a written set of findings or conclusions for the

Work Group, now that we have access to all the classified information, as well as maybe some other additional information. So that's all coming to full.

What I'm going to do is I put some points down. These are points that, I think, will find their way into a preamble. I think you've used preambles in your assessment. I think it is helpful. So there's overarching comments. I want to start with the same kind of overview that you have, you and Bryce put down.

I think there is a philosophical difference. I mean let's just, you know, I think that's agreed to in your paper. I think we tend to agree with that. There is a definite philosophical difference.

So I want to lay that out for the Work Group, because we've had a number of exchanges. But sometimes, I think, you know, it may get lost in all the give and take. I want to spend some time on it.

Now I wrote it down, primarily because after going through your paper, I realize this is pretty nuanced. Even the nomenclature has different meanings, and I just want to make sure that -- we have this opportunity today. I just want to make sure that we have given you as thoughtful a rendition of where we're coming from as you have given us.

I think with that preamble, we're going to kick the tires for specific technical issues. But quite frankly, I guess I'll be surprised if we identify, after four or five years, you know, actual monitoring data or technical data that's a game-changer.

I mean I think that would be surprising, although there are some issues that we need to close out. So this may very well come down to some of these more policy-oriented disagreements that the Work Group and then the full board will have to wrestle with, and make some judgments.

Okay. So bear with me, indulge me on this, because again, I jotted down some things, and I wanted to do some reading, which I hate to do, but I think just to make sure this as clear as possible. In the introduction, your response, I think, was pretty much correct.

However, I think we would disagree with parts of it. This is the -- this is what you and Bryce kind of described as the primary point of disagreement in your introduction. I think yes, we would recognize the lack of routine bioassay, or very much real data of any kind.

I think we agree that there is no routine bioassay data, and very little usable or representative field data. I mean there is field data, but I think it's very arguable whether it's either representative or usable for our purposes.

I don't think we'd be debating, as long as we have had, if there was good field

data. I'm talking air sampling or what-not to back up what's missing in the way of bioassay data.

But that's not particularly helpful so therefore, you know, what we have is what we have. It's the latter day bioassay data is what we have.

We agree that Pantex is much different in the production and fabrication facilities that make up the rest of the weapons complex. Very familiar with the weapons complex, having lived with it for 20 years. I agree fully that Pantex is a different bird, okay.

When I had the health physics program with the Department, we didn't spend our time worrying about Pantex, okay. I'll be quite frank with you. We were worrying about Rocky Flats, Fernald and some of the labs, okay, and for the primary reasons you've mentioned, assembly-disassembly. It's not a whole lot of material roaming around for

exposure. So we were pretty aware of that.

Now when we say routine bioassay, I think the challenge there, excuse me, is that yes. I mean you're running an assembly-disassembly with sealed components, you know. I think you make a good point that yes, today's HPs would likewise probably design it with routine bioassay either.

However, it depends on how you describe routine. In this case, because you have an operation that involves, I'm going to use the word campaigns. Maybe that's not the right word, but you're cycling weapons systems through for assembly, and you're cycling them back at the end of their operational lives for disassembly.

So there's these sort of drawn out campaigns, and it may not be months. It may be years, because things in the stockpile take that long to get out, and then they take that long to come back out.

So if you have a particular system

that presents an exposure potential of some kind, and I think we've been dwelling on depleted uranium, yes, there's no routine bioassay program. But no, we do have something approaching a chronic exposure potential to that particular disassembly process involving that particular system, okay.

I don't think there's any debate really in my mind that assembly was pretty clean. I don't think that's an issue. I think we're really more focused on disassembly. I want to make sure that's clear, because you know, sometimes we throw assembly-disassembly around.

I don't think there's any question that the components that were assembled, and there's a little asterisk there, and you know the exceptions I'm talking about, were relatively clean, and were really more focused on the disassembly side.

So I guess from that standpoint,

there's some very real exposure potentials that deserve to be addressed in the same manner as they have been addressed in previous SEC evaluations. We've been through evaluations and have gone through the same intellectual regime of, you know, if there's an exposure potential, how does one go about addressing that exposure potential.

It's through the examination and evaluation of the data, the records and the facts, and I have had some pause, I have to admit, on this SEC, about the reliance on -- and I'm using your words in your piece, you know, descriptive memos, the presumed comprehensive radiation protection program, and the implementation of strict requirements about the nuclear weapons production program.

I lived with the production and fabrication and processing program for a long time at DOE, okay. It does have an obvious rigor, because of its mission. But, having lived with the radiological issues from 1980

to 2001, I'll be the first to tell you that it wasn't pristine, there were issues and programmatic deficiencies.

It took a heck of a lot of effort by everybody in the field and the labs and in headquarters to straighten out. So I have a concern, when we diverge from objective facts in the record, to starting to look at the presumed rad program going back in time, and procedures that, you know, if implemented rigorously, would have been effective.

I mean those presumptions, when you take them back in time, I think, are --put you in jeopardy. I think the Work Group and the Board has to be careful, and I had this dialogue with Jim Neton in Santa Fe last year on the same subject. We have to be very careful about how much reliance one puts on programmatic documentation and programmatic assurances of rigor, quality assurance and the whole thing.

And you know I understand where

that comes from and the weapons program has been successful because of that rigor. But on the radiation protection side, there were issues, and they were addressed and they've been corrected. But nonetheless, there were issues, and a lot of these issues got down to procedures that should have been implemented more comprehensively and with better quality, and you know, rad protection evaluations that should have been done, perhaps, with more accountability than they were. So I just want to make sure that's square.

MR. ROLFES: Can I respond here? I agree with you. I agree, because right now basically, what we're doing is looking at, you know, our interpretation of historical records. So we certainly acknowledge that there were some historical concerns. So that's essentially why we're doing dose reconstructions.

Our responses here basically aren't necessarily how we're doing dose

reconstructions, because if we did rely upon this information, our intakes would be zero essentially. We wouldn't be assigning any radiation doses.

But the way we approach dose reconstructions for the Pantex site, we've looked at historical exposure potential based upon the documentation that we have been able to collect, and used claimant-favorable assumptions to assign those intakes.

So were not saying there was never any potential for intake, and this is -- I mean this is the debate, you know, of essentially, you know, are intakes that we're assigning appropriate. So I'd like to continue with that.

MR. FITZGERALD: Okay. Well, like I said, again, I thought your March 10th piece, again, was I think a lot of thought went into it. I think I'm reacting to the position. It says here the NIOSH position is that there is compelling evidence sufficient

to justify the conclusion, based upon descriptive memos and an understanding of the basics of both the comprehensive radiological protection program and the strict requirement of the nuclear weapons production fabrication controls.

That's a strong statement. I mean that basically says, when I got to that statement, it basically said that that's where the source or basis of NIOSH's position on Pantex stems from, and you know, before that, you say there is a lack of field survey data to support a conclusion that exposure potential during the early periods at Pantex were essentially nil, or can be adequately bounded.

So you acknowledge that there's a lack of data to support a conclusion. However, and this is sort of the however part; this is where you say but there is compelling evidence.

So I'm just saying that, you know,

that's almost the strongest way one can phrase that, and I guess I take exception to the agency putting such stock in those kinds of descriptions, because I think in the past, certainly from the DOE experience and history, they have been found wanting.

I think the way EEOICPA was set up originally, was to challenge the paradigm that, you know, if you have a good program, you're going to be fine in the way of exposures, doses and records. I think this program puts that on its head and says let the data and the information speak, you know, not presume that things were fine by virtue of procedures or programmatic descriptions or what have you, that you have to go back to the source information, and see what objectively that tells this agency as an independent agency, and not take assurances from DOE or rely on DOE.

And listen, I lived at DOE. I'm just telling you that this is the reason it's

an independent evaluation from the outside, and a fact-based, data-based inquiry to avoid those kinds of assumptions.

So I just want to, just you know again, I know we've had a lot of exchanges, and you know, these are good-faith exchanges. I think there's ways to interpret things. But from the standpoint of how we're looking at it, that's a bit of a game-stopper for us, that the compelling evidence ought not be the paper.

It shouldn't be the program descriptions or whether one thinks there was a comprehensive rad program 30 years ago or not, or whether, you know, the strict regime of the weapons program kept us out of trouble.

It probably did in some cases, but you know, to say a blanket, you know, that kind of assurance, the diamond-stamp program, you know, kept us out of trouble with respect to dosimetry and records, I think, is too far a reach.

So that's kind of -- that's where we're coming from on that issue. I think the compelling evidence can't be just the procedures, the programs and all that.

MR. ROLFES: Sure, sure. I agree, I agree. With this response here, basically we're saying that not DOE's documentation is the bounding scenario; it's our interpretation of the data. We're not just strictly looking at procedures and policies for issuing badges, because if we were doing that, essentially we'd -- you know, DOE would be able to do that better than us.

So DOE would be doing the dose reconstructions, and basically what we're doing, we're looking at, you know, procedures, policies, the actual data from the individuals, and then we make some assumptions about that data.

We look at, you know, uncertainties associated with that data, whether the data are complete, and we make

judgments in our Site Profiles to assign intakes that, if you compare the results of our dose reconstruction reports to an individual's actual DOE-recorded dose over their lifetime, the doses almost in every case are sometimes an order of magnitude or two or three times higher than the actual DOE dose of record. And when you compile all these uncertainties for someone who's worked at the site for, you know, 30 or 40 years, the doses that we assign can be unreasonably large sometimes, but yet they're claimant-favorable. So this response here is basically saying that our approach and our Technical Basis Document in our Site Profile is bounding.

MR. FITZGERALD: Well, I guess I have two points on this. One, we're in the SEC evaluation context, and I recognize that from a dose reconstruction standpoint, NIOSH is going to apply appropriate conservatism and has always done that. I don't think that's even in debate on this thing.

But in the context of the SEC, we're trying to establish whether the information, the records, what have you, are adequate and sufficient to enable you to get to the point of applying a conservatism in the dose reconstruction.

I'll agree with you. You know, Pantex is a tough one. Pantex, like a lot of us, looked at the operations and said, you know, it's a component factory. You put them together and you take them apart, and you don't really need a comprehensive radiation protection program.

You just have to be mindful of tritium and, you know, make sure there's no cracks that would enable sealed material to get out. I mean, you know, as long as you have good QA, diamond stamp, you were in good shape.

But, you know, in its operational history, it wasn't pristine. It wasn't that way 100 percent. There were some potential

exposure pathways that, you know, we talked to the workers; you have, too.

They were exposed, and the issue is, can we find a way to estimate that dose. We can get into specifics. I think you've got specifics coming. I'm just sort of giving the overview, but -- and that feasibility is kind of where we're at. It's not so much whether you can apply conservatism and get down to dose reconstruction.

I'm just saying do you have a starting point, in terms of sufficient information, to guide the dose reconstructor or not, which is the essence of the SEC. I think for Pantex, the dilemma is because of the, you know, the mindset, and this was a shared mindset. I mean it was at headquarters too, I'll tell you, that because it was a component assembly-disassembly, you didn't need to have an ongoing routine bioassay program.

Unfortunately, in those instances

where you happen to have an exposure pathway, you weren't covered. It was only belatedly that they did the kind of sampling and monitoring that would give you the data. So I know we've wrestled with this issue, but I'm going to get down to talking about later, you know, this back-extrapolation issue.

But before we get there, I just wanted to finish. Again, I think these are some interesting philosophical points, but I think these are more than philosophical points. They are really what's driving some of the disagreement that we've been debating now for over a couple of years. I just want to spend some time on that, if I can continue.

So anyway, you know, in Santa Fe, we had the opportunity to schedule an exchange, that was Jim Neton and myself, on exposure potential. That was last year, last November. And you know, it was really -- it really originated with some issues we had at Mound, but you know, similar issues we've had

with Pantex and some other places.

I think another problem that happened here is with this notion of how one deals with exposure potential. I'm speaking specifically about the uranium.

This is the depleted uranium in the systems, and I'll keep coming back to this, because I think this is, in my way of thinking and my colleagues may want to chime in with other options, but I think the depleted uranium is probably the central issue on the SEC. There are some other issues that need to be resolved, but to me, the depleted uranium is the central one.

The dose estimation approaches, I think for DU at Pantex, what you're proposing is unprecedented. I again have not seen that anywhere. It's not based on any, you know, demonstrable bioassay data back when these exposures occurred. You're taking 1989 data. If we had representative field data, if we had air sample data that could be used, I

think we'd be using it.

But you know, there are some issues with that. In a lot of cases, it was collected for alarming purposes, not so much for dosimetry purposes. It wasn't necessarily representative by virtue of where the monitoring was done, the collection was done.

As I think Jim Neton outlined in his presentation, as you go down through this hierarchy, you're talking source characterization as well. It's difficult to characterize the source in terms of the degree of exposure, and how much people may have been exposed to it at the time as well.

So you know, my concern is Jim's bottom line, as far as 42 CFR 82.17, which is the regulation that he outlined and briefed, was is it's incumbent on NIOSH, these are his words, to quantitatively evaluate exposures associated with known source-terms. Depleted uranium with at least four systems at Pantex, maybe more, involved depleted uranium that may

have been available for exposure.

And as I say, it's incumbent on NIOSH to quantitatively evaluate those exposures. What does that mean? We went through that, and it means the degree to which the quantitative evaluation considers available data and would include what constitutes a representative sampling of available contamination surveys, nasal smears -- these are right off the slides -- radiation work permits, et cetera.

Monitoring data from coworkers, perhaps even a quantitative characterization of radiation environment based on historic workplace information, and this is anywhere from area dosimetry reading, general area radiation survey results, air sampling data, any of the above. Perhaps a quantitative characterization of the radiation environment.

You know, if you can't get the actual field data, perhaps you can characterize the radiation environment based

on analysis of the processes. These would include radioactive materials, characterizing source materials, job tasks, locations, what have you.

So you know, I think what was presented was pretty coherent, because we had some confusion on this with Mound. Pretty coherent, yes. When you're talking about looking at, you know, evaluating exposure potential in the context of an SEC, you have a number of options to march down if in fact you don't have bioassay data, and you can go through a very deliberate process.

I would be the first to admit, you know. I think we even pointed this out to Jim, and he kind of like, you know, said one of the items on the long list of things that you could apply was radiation safety practices, and we kind of jumped on it, because that didn't seem to be as quantitative.

But he said it was a bit sticky to

apply radiation protection practices in the SEC context, because obviously it moves away from data information to interpretation of how programs are implemented, and it has to be done carefully.

But again, what you described, Mark, a little earlier is a little different than what I read in here, and that's one thing I want to clarify, that when we get to your subsections on the basic characteristics of the Pantex mission and operations, national security assurance requirements and the comprehensive radiation safety program, it's less of what you described and more of a general, you know, we take comfort.

We find it compelling that these programs provide the rigor that they have had historically. So I don't take exception to how you're walking down, trying to figure out how to apply conservatism, taking a radiation safety practice and going down through a dose reconstruction basis.

I think our concern is a priori accepting the rigor as a compelling part of the position that one can dose reconstruct. Okay.

MR. ROLFES: Thanks, Joe. This most recent response that was dated March 10th, 2011, some of the topics that were identified to us were more subjective than objective topics. So we prepared a subjective response, in order to keep us both on the same page, I guess.

Our previous response from March 27th, 2009, I'm sorry. That's, the date should be 10/30/2009, and it was probably sent to the Work Group in December of 2009. This one was 38 pages long. To discuss the specific types of information that we have that would allow us to quantify exposure potential, on page nine of that previous response, I just wanted to point we do have bioassay data.

The first bioassay data that was

collected for depleted uranium --

MR. FITZGERALD: Can I ask your indulgence, though? Can we get to the specifics on the -- I know we have these dose reconstruction issues, which I think you're talking about the DU and the backstrap.

MR. ROLFES: Yes.

MR. FITZGERALD: Can we look at that as a specific issue, because I think, you know, the document that you're alluding to also has a lengthy preamble.

MR. ROLFES: Right.

MR. FITZGERALD: I just want to deal with the preamble first, because the specific points that come later refer back to the preamble quite a bit. I think that preamble is the context or the basis for what drives later in both papers. I just want to make sure that we spend some time on that, because we have debated some of those other issues.

But I want to make sure that

before we go to specific technical points, that we spend some time on the preamble, okay. I think you raised some other issues I want to just address before we get there, and we will get there.

MR. ROLFES: But let me respond to what you've said, and then I'll answer specific questions from you about the preamble, if that's okay.

MR. FITZGERALD: All right.

MR. ROLFES: To quantify historical exposures, we've got, you know, a number of different types of data. We basically developed intakes for our TBD based upon a large collection of bioassay data collected in the 1989-1990 time period associated with some disassembly work.

However, prior to that, we do have bioassay data for depleted uranium, and the first year that we have depleted uranium bioassays was 1959 at Pantex. We've got bioassay data in 1960, `63, `65, `67, `68.

There's a little gap there; not until '78 again, 1983, and then quite a bit more in 1990, `94 and 2001. There's more of a routine program now in place.

It's largely based upon historical policies. Judgment was made about exposure potential, and there were higher limits for exposure potential historically than there are today. In addition to the bioassay data that we have, we also have air monitoring data. We do have source-term information. We have program policy information and we have some swipe data as well.

If we take one piece by itself, there's a lot of uncertainty. We might not know the full extent of how long an exposure occurred. We might not know everything about that exposure, so we make some assumptions, and we make claimant-favorable assumptions. We use those uncertainties to the benefit of the claimant.

However, when we get down into

additional data, when we have air monitoring data and swipe data to show, you know, that there is or is not an exposure potential that's different from what we've assumed, we can use that and focus in on a more precise estimate.

So normally, when we have smaller amounts of information, our dose estimates are larger because of the associated uncertainties. But that's just my brief response about the quantitative assessment of the data that we have.

MR. FITZGERALD: Yes. I'm talking in a different context. You're, again, going back to dose reconstruction, which I understand that we need to apply that degree of conservatism, and I agree you go back to whatever data you have, to make sure that that's there.

But in the context of SEC evaluations, the quantitative assessment that Jim Neton talked about in his presentation

last year is again, what is this hierarchy of information that ought to be applied in judging whether or not dose reconstructibility with sufficient accuracy is feasible or not.

And, you know, again, we wanted to clarify that question, because we've been in this debate on a couple of sites, where you have -- and usually it's not primary nuclides, because usually you have enough data for primaries. It's usually the secondaries, where you have incomplete data. You know you have an exposure potential, but maybe you lack the actual monitoring information.

So how do you actually deliberately walk through this, to come to a conclusion that yes, we can find a way to bound this dose, or we can't? You know, where's the threshold for saying we can or cannot?

We got into an issue, to say we got into this issue at Mound, where we finally got to the point where yes, there's no data,

but you know, the world's best internal dosimetrist was running this program. That person would have known better to have done bioassay, if bioassay would have been required.

We're saying wait a minute. You know, that's sort of like saying we don't have any evidence or objective information, but because so and so ran the program, and because it looked like a rigorous program, we can assume he would have bioassayed, if in fact bioassay would have been entailed, because of the exposure back then. So how would you possibly know that?

So that's what got us into this discussion. You know, it's got to be something more objective than that, and what is this thought process on the SEC that we should walk down, so that we're not miscommunicating or talking past each other all the time when we get into these questions?

For this question, the issue is

you may have some bioassay data points here and there in the history of Pantex. I agree. I've seen some of those data points.

But you have felt that those data points weren't sufficient to base dose reconstruction on, and that you, in the context of the SEC now, would rely on the '89 data, because you have more of it, and because it was, and I think this is a subjective judgment, but maybe one that's bounded on talking with operators at Pantex.

But this was a pretty dirty situation, a dirty system, and one could conclude, as you have in the ER, that that was a bounding situation, that you couldn't imagine a worse situation, that you wanted to use that as a means to apply intake values and dose reconstruct for all depleted uranium exposures going back.

So I guess, you know, again, there may be data on this issue at Pantex. But I think you've already judged that data.

Whether it's these individual bioassays that existed back in history, or even some of this air sampling and smear data, whatever it is. It's not enough to support its use to do dose reconstruction for those exposures that may have occurred back in those systems that were being disassembled, for example. You want to go ahead and apply the '89 data.

We can get into that, and I guess we are getting into it. But again, I don't think that satisfies the quantitative approach that Jim laid out, in quite some detail, and I've got the slides with me in detail, which says that you deliberately, you know, looked for quantitative information to base these judgments on in terms of exposure potential.

You do not go to, you know, sort of the overarching program, you know, documents and that kind of thing that you -- that's something that would not be usable.

Okay. I want to just move on to talk about these subsets, because I think

these have come up in the past. The first point is the basic characteristics of the Pantex mission operations. I guess we agree, and I said this earlier, that compared with other historic operations, Pantex is and was relatively different.

It was, I don't want use the word "cleaner," but because of the nature of the operation, it just did not involve as much, you know, contamination or exposure as some of the other facilities. Most components are and were sealed, and the operations involved assembly and disassembly.

But as I kind of pointed out earlier, we disagree, however, that the operations were pristine from a radiological standpoint. In fact, disassembly sometimes involved extended and repeated exposure to depleted uranium, thorium and tritium. These were not always incidents, from the standpoint of unexpected occurrences.

For some disassemblies, it in fact

was absolutely expected, that you would have those exposures.

MR. ROLFES: It was known.

MR. FITZGERALD: Right, it was known, exactly. So again, yes. I don't think there's any disagreement of the basic characteristics of the mission operations, but again, we don't see how that is relevant to the specific question of, you know, is there an exposure potential to uranium, and is there a way, is there sufficient data and information to dose reconstruct with sufficient accuracy or not.

It's sort of changing the subject, which I want to make sure it's clear, that yes, you know, we don't disagree that the operations were different. But is it relevant to that question? I don't think it is.

National security assurance requirements. I think that was the next thing. This is the diamond stamp issue. We looked through and while we were in

Germantown, we looked through a number of national security documents, and talked to people on the weapons program about diamond stamp.

Yes, basically, there's no disagreements. A rigorous Quality Assurance Program, and you would expect to have a rigorous Quality Assurance Program on weapons assembly and disassembly. No surprise there. Yes, there clearly was swiping of components, as you point out, before they came into Pantex.

But the diamond stamp certification, which is a broad QA certification, doesn't guarantee contamination-free components from all sources, okay. I think yes, Livermore might have been careful and might have had procedures and blah blah blah. But it doesn't guarantee it.

I think when we get to Germantown again, we want to show you some documentation,

which would show that it's a rigorous program, but it's not one of the same as a guarantee of no contamination on the assembly side.

MR. ROLFES: There's always exceptions, and some of those, you know, that there's exceptions. And what I'm saying is that we're aware, to the best of our knowledge, that there's exceptions, and we've taken those into account.

MR. FITZGERALD: These weren't exceptions by, you know, lack of rigor. These were exceptions that, by virtue of the source where it was coming from, there was some evidence of residual contamination.

So but I want to make it clear, you know. I'm not going to debate, you know, did diamond stamp do this or not. I don't think it's particularly relevant to the real issue that the Board is focusing on, which is, you know, does the data and the information, does it give you a sufficient basis for dose reconstruction for uranium exposures or not?

I mean you know, quite apart from what this program does or what that program does, again I think it changes the subject. It really focuses -- what we're focusing on is, you know, the adequacy and completeness of that data. Does it do it or not? How do we know? And I think, you know, whether or not, you know, the Department implemented diamond stamp Quality Assurance Programs. I can show you Quality Assurance Programs at every DOE site. 5700.C was the quality assurance order.

I mean yes, there was a lot of quality assurance and it got even bigger as time went on, with the Defense Board. But does it make a difference historically on this question? I don't think it does. I think it's a useful piece of background information, but it doesn't really bear on this particular issue.

MR. ROLFES: Sure. I think I agree with you on that as well. The reason that's in there, you know, what we start with

in the health physics hierarchy -- I can't speak, sorry, hierarchy of data. We start with personal information, bioassay data and radiation exposure information for that individual and for that coworker, for that individual's coworkers.

In addition to that, we've looked at air monitoring data. We've looked at survey and swipe data. We've looked at source-term information, and the diamond stamp program information is in there, just because there's another set of information that might help us to characterize exposures, and basically draw our attention to any specific programs that may have been an issue, where radiological contamination could have been a concern.

It was just another source of data, rather than focusing on the use of only one type of data. We've tried to do as comprehensive of an analysis, in looking at, you know, all sources of information that

might have something of use to us in assigning intakes.

CHAIRMAN CLAWSON: Mark, expand a little bit on the diamond. What information on the diamond stamp are you using?

MR. ROLFES: Well, if you take a look at some of the earlier -- you know, if you have concerns about the functionality during a Quality Assurance Program, you want to make sure that you track those concerns with a specific weapons system.

So there were some occurrences that would result in some significant finding incidence and significant finding notifications. So we have pursued that route, to see if there might have been any information in these significant finding incidents or notifications, that might help us in dose reconstruction.

We looked into this probably about three years ago. There might have been some pieces of information that we already had, I

guess, from other sources of information. So for example, you know, these data might have indicated that there was a problem with uranium corroding or something, for example, and so in looking back at our records, our air sampling data, we've got air monitoring data for that time period or for that program we've got some swipe data.

So it was not necessarily our use. We're not relying upon that for dose reconstruction. We're just consulting that source of information as another source, to see if there's additional details that might help to explain exposure potentials or make sure that we didn't overlook something.

CHAIRMAN CLAWSON: You understand my background in quality assurance, right?

MR. ROLFES: No. Please explain. I mean --

CHAIRMAN CLAWSON: My background is quality assurance and the programs. So one thing I want to make sure that you understand,

that Quality Assurance Program, the bottom line was, was to make sure that it goes boom, and that it meets certain requirements.

Then to me, you're putting this up as the holy grail of, that this is the most wonderful thing out there. I've looked at the program, and it is. It's very staunch. But also too, you get back to it and you see the biggest thing that they were looking at is component reliability and items that were found, laws to be corrected.

They weren't worried about -- the only reason that corrosion came up was because the parts that they were dealing with, it started to degradate them. So that's where this Quality Assurance Program comes into. I've just been dumbfounded to understand how we could use this into a dose reconstruction. But I understand also, too, that we're supposed to look at all avenues, and be able to look at this.

I just, I hope you understand that

this quality program was a parts list that met this. We have numerous ones throughout there. We deal with Triple 3P right now. I'm just wondering, I just really had a hard time understanding how we were using this in dose reconstruction.

As throwing out that we've got the diamond stamp, okay. It's just another style of Quality Assurance Program. It has nothing to do with the components. It does have to do with the wells, it has to do with the size, it has to do with everything like that. But nothing with the components side.

MR. ROLFES: I'd agree with you, that there really isn't much that can be used from dose reconstruction. This was more to make sure that we investigated all avenues, to make sure that we were aware of as many possible exposure potentials as we could.

So this source of information was just another piece, to make sure that we weren't missing a big part of the puzzle.

CHAIRMAN CLAWSON: So I'm sure that you've looked at the Tiger Team report?

MR. ROLFES: Yes.

CHAIRMAN CLAWSON: You've read parts of it, because I was just thumbing through it. There's inadequate information -- this is page 88. There's inadequate information on the hazard-related risks of various operations in the site. There's inadequate guidance on how the personnel risk and plan accordingly.

Site studies do not have all resources available to satisfy requirements suitable. I can go on. This is just five out of 40 where they're hammering them on their procedures, people. The one that I found most interesting was just down a little ways, and let's see.

Basically, what they're saying is -- here it is. "The work environment is reactive, rather than proactive." As you've said, you know, bioassay was event-driven, and

that this is just another statement to it. I hope that when we're looking at all the information, we just don't take out the information that we like, to be able to see it.

MR. ROLFES: True, true.

CHAIRMAN CLAWSON: Because in anything like this, we need to make sure -- our bottom line is, is to make sure that the claimants are being treated friendly, and also that we're reviewing all the avenues we can.

MR. ROLFES: I completely agree with you on that. Certainly, you know, if we were excluding, you know, information that we didn't like, we wouldn't have incident-based intakes, and you know, our claimant-favorable analyses regarding exposure duration, exposure potential, that essentially in some cases may not have existed.

We've made some pretty claimant-favorable assumptions regarding exposures that may have occurred, but were of such low

probability that they likely did not occur. Regarding the Tiger Team report though, I looked at it a while back, and it's been a few years, because I know that the petitioners had identified it to us. It's more than a thousand, or it's right around a thousand pages in length.

CHAIRMAN CLAWSON: 850 to be exact.

MR. ROLFES: Okay. I'll have to take a look back at page 88, but from what I recall, there was only a couple of pages that were specific to the radiological protection practices and concerns about health physics staffing levels.

Most everything else wasn't very clear as to whether it was in fact dealing with radiation exposures, or if it was more towards, you know, explosive operations. Because, you know, that was one of the primary concerns, was the concern about detonating high explosives.

I can take a look back to see what it says on page 88 there, with those -- you said there were 40 issues.

CHAIRMAN CLAWSON: It's part of the safety and health evaluation which they were doing.

MR. ROLFES: Okay.

CHAIRMAN CLAWSON: What -- the point that I'm trying to get to is that I hope that we're looking at all avenues of this, because one of my big things is on the part of event-driven bioassay. What classified as an event? Do you remember what the health physicist told us down there, Scott?

MR. ROLFES: What's that.

CHAIRMAN CLAWSON: "We're going to clean it up before the end of the shift." Now, after 1989, that is if they had great, strict regulations.

MR. ROLFES: Things are certainly different now than they used to be, and I fully understand that and acknowledge that.

There was a large policy change with, you know, different approaches on controlling the radiation exposure.

You know, historically, people were allowed to receive a lot more exposure than they are nowadays. There's a lot lower administrative control guidelines and radiation exposure limits.

CHAIRMAN CLAWSON: And to get back to what Joe was saying, to be able to take this on a procedure level, that everything was done correctly, I think that's kind of where our heartache comes into, especially anybody that's really worked in the industry. We know how the procedures go. I just -- I want to make sure that we're looking at all things on that. Sorry to interrupt, Joe.

MS. ROBERTSON-DeMERS: Can I break in and ask a question of Mark?

CHAIRMAN CLAWSON: Sure.

MS. ROBERTSON-DeMERS: Have you located the significant finding notifications

and significant finding incidents, and if you have, where did you locate them and under what titles?

MR. ROLFES: They'd be with the design laboratories.

MS. ROBERTSON-DeMERS: Okay. So you located them at LANL, Sandia and Livermore?

MR. ROLFES: We spoke with people from the design laboratories regarding the significant notifications. Not a comprehensive analysis of those, but I spoke with some specific engineers regarding those data.

MS. ROBERTSON-DeMERS: Did you actually get your hands on these?

MR. ROLFES: I have to take a look back at my trip notes.

MS. ROBERTSON-DeMERS: Okay. Can you let me know, because that's one of the things we're trying to track down.

MR. ROLFES: Okay.

MS. ROBERTSON-DeMERS: Thanks.

MEMBER BEACH: So are we taking that as an action from this meeting?

CHAIRMAN CLAWSON: Yes.

MR. ROLFES: Those, I was going to say those notes are in the SRDB as well. I can send out my notes that are draft notes, so --

CHAIRMAN CLAWSON: Mark, you'll take that as an action, to make sure --

MS. ROBERTSON-DeMERS: Maybe you can just provide me with the SRDB number.

MR. ROLFES: I can do that.

MS. ROBERTSON-DeMERS: Okay.

CHAIRMAN CLAWSON: Sorry, Joe.

MR. FITZGERALD: Okay. Again, walking through what I would call the preamble, and it's the preamble to, I think, the previous paper as well as the March 10th paper, which sets the stage for, I think, the NIOSH position. Again, it's the compelling evidence that the conclusion of dose

reconstructibility is the right one.

I want make sure we outline, point by point, where we have differences on this. So on the comprehensive rad safety program, we'll leave the national security assurance requirement behind. I've heard you say there, and you've qualified your remarks, saying that it was a piece of something that contributed.

But again, I have to go back to where you make it very clear up front that this was the compelling evidence that justifies your conclusions. So I just want to make it clear that I think I'm hearing you say a little something different than what's in this paper.

But going to the comprehensive radiation safety program, and we've had discussions on this in the past, that you know, one can look to the rigor of that program, as a means to provide assurance that those who should have been monitored were monitored; that internal dosimetry procedures

were implemented, in terms of the bioassay samples that would have been event-driven; that contamination would have been cleaned up quickly; and that swipe results were taken, so forth and so on.

I think you provide a number of quotes about, you know, the program responding to contamination and instances of air releases, as well as the 1961 Cell 6 and so forth and so on. What I'm going to give you is a slightly different picture, because I think we don't agree that in fact Pantex historically had a comprehensive radiation protection program, in the same vein as you have described it.

So I want to just go through this. Almost every independent audit that we can find, and we're still looking for more, of the historic radiation protection program at Pantex, fading from 1980 has found serious and fundamental flaws in its comprehensiveness, design, staffing, policies, procedures, self-

assessment, dosimetry and scope, almost A to Z.

I'm going to give you, and we'll put this in writing. I mean I just want to give you an outline of some of the -- and these are independent reviews, not sort of in-house Pantex reviews, but independent reviews from the outside. 1980, this is a DOE Albuquerque Operations Office. DOE Albuquerque was responsible for Pantex, and they were investigating a radiation exposure incident at Pantex, and I believe this is in the SRDB.

"Found the overall quality of the Pantex dosimetry program to be deficient. Dosimetry laboratory technicians never received formal training for their responsibilities, no approved internal operating procedures for the dosimetry program. Neutron dosimetry calibration not performed adequately. TLD response not understood for specific applications, and

operators at Pantex mis-assigned dosimeters, leading to a lack of or potential lack of neutron dose assessment."

That's where the quarterly versus the, I guess with monthly dosimeters. Some had neutron dosimetry, some did not, you know, that whole issue. So that was the big flap.

MR. ROLFES: There was a concern in that time period, because of the dosimeter that was used. They were unable to report neutron doses correctly in a high gamma flux field.

MR. FITZGERALD: So yes, I guess my point is that Albuquerque rightfully was really concerned about it, and went in and found all these program deficiencies to boot. So the incident sort of led them to a more broader investigation and a number of findings, which all focus on dosimetry, and all sort of give you pause as to how comprehensive the Pantex program could be, if you could have such a suite of deficiencies.

Okay. Brad mentioned the Tiger Team, and since we were trying to figure out what the heck it said, I outlined it. I didn't want to interject at the time. The DOE Tiger Team found program deficiencies in health physics support staffing levels and training, as you were pointing out.

But this is the staffing and training that was necessary, in the Tiger Team's view, to support and sustain adequate air sampling and swiping. So the implications for that is they were concerned about the staffing levels, rad techs and whatever, because you couldn't possibly cover the plant comprehensively if you were going to do the necessary swiping and air sampling that a plant that size would require.

So there's, you know, the staffing just wasn't sufficient. The quality assurance for rad monitoring data, control of rad sources, maintenance of employee exposure records, contamination of reports, pre-

employment and new employee baseline bioassay monitoring were some of the finding areas in that Tiger Team.

MR. ROLFES: Joe, before you go on, I see you're reading off of a piece of paper there. Is that something you might be able to share with us?

MR. FITZGERALD: Sure. I mean I kind of relied on DOE to clear a bunch of stuff, including this tome that Kathy wrote, and they just -- in fact, I was hoping they'd have a number of things that would be clear for this meeting, and they just couldn't make it.

So unfortunately, we could get the data accuracy out. We couldn't get all of sort of the stuff that would be presented in the meeting. So yes. I mean I'd be glad to give this to you, but I can't distribute it formally.

1990. This was in the same time frame. It actually followed the Tiger Team,

because most of the sites, once they got a Tiger Team, you know, the field office, after the Tiger Team left, sort of went in to try to figure out, you know, exactly what the Tiger Team was talking about.

So if you could imagine Albuquerque went in after the Tiger Team left at Pantex, and wanted to find out, you know, okay. You found these deficiencies I just talked about. You know, what else is going on, and is the rad protection program comprehensive or not. What that report found in 1990, right after the Tiger Team left, they found deficiencies in the internal and external dosimetry programs, and a lack of radiation safety procedures and guidelines from the rad techs, performing duties such as types, frequency and location of swipes.

So they kind of added to what the Tiger Team found, and found some more programmatic deficiencies related to dosimetry and what the rad techs were doing as far as

comprehensive swiping and contamination control. That report, I'm trying to remember. I think that was in Germantown. So I think at the very least, if it's not in the SRDB they'd be available there.

The 1991, this is a year later. This is a GAO report, and actually you can get this online, so I'll give you the citation. RCED-91-103. It's 91-103. It's a GAO report from '91. This was, as follow up to the Cell 1 accident.

MR. ROLFES: Would you provide that to us please? It would make it easier. You could send us a link or something.

CHAIRMAN CLAWSON: Well, that's the same thing we go through with you on our SRD numbers.

MR. ROLFES: Sure, sure, I understand.

MR. FITZGERALD: Okay, I'll Google it. I think it's there. GAO reports tend to be right up online. But here's a quote from

that report. "The radiation protection staff at Pantex was ill-prepared to handle the release of radioactive gas like tritium.

The staff had little or no knowledge of the general -- this is the health physics staff -- of the general characteristics of tritium, and the biological hazards that such a hazard posed.

"They took few to no precautionary measures to protect workers from being exposed to the gas." This is sort of a critique on the Cell 1 accident.

MR. ROLFES: Sure, sure.

MR. FITZGERALD: It speaks to, you know, again speaks to the rad protection program, how comprehensive and rigorous it might have been historically. Even going up to '93, when the Defense Board came on the scene, the Defense Board was concerned about continuing deficiencies in the external dosimetry program.

They actually came up with a

finding specific to Pantex and external dosimetry. What they were focusing on was their concern over discrepancies in neutron dosimetry, because of the energy, depends that issue.

MR. ROLFES: Right.

MR. FITZGERALD: But you know, the problem was that they weren't correcting it in a timely way. So you know, when we go to -- if and when we go Pantex, there's a number of other investigation reports. But you know, I just want to belie the sense that's provided in the March 10th report, and in the prior report, that somehow you have this, you know, this facility that had this rigorous program that locked down a lot of these issues.

And I went through all these programmatic descriptions, and you know, I guess from my experience of going through and doing audits at all the DOE facilities, you know, I can look at the program descriptions and find the same descriptions at every single

site.

In fact even today, when we did operational audits, because you know, the formal program was pretty established. Everybody sort of knew how to write against the -- whether it was 54-811 or 835, everybody knew how to write against the requirements.

So we didn't expect to find the written program, you know, out of sync with the regulations or the DOE orders. But the implementation though, the actual execution against those requirements, particularly if you go back in time, because there's nobody here, I don't think, that remembers Chapter 11, except for Bryce, Rich and Mel Chew.

Stu Hinnefeld remembers Chapter 11, but you know, it was like three pages long. So you know, in the old days, it was all performance-based. They'll often do well, have an ALARA program, but there was nothing that said, you know, what it had to contain and how it was to be implemented in any

detail.

So it was all performance-based, and each site kind of, you know, interpreted it differently, and the level of rigor and what they did was different. So again, I think I would not want to see comprehensive rad protection program historically listed as compelling evidence for Pantex. I guess that would be the short form answer to what I would object, in terms of the position that NIOSH has taken relative to Pantex.

MR. ROLFES: Comprehensive back in those days wasn't the same comprehensive as nowadays. I mean that's --

MR. FITZGERALD: I don't think Albuquerque Operations Office felt in 1980 that they had a comprehensive program, and that was back well before we changed Chapter 11 to 54-11, well before 835 and enforcement came along.

MR. ROLFES: One could make that same statement today. I mean --

MR. FITZGERALD: Well, I'm just saying, though, that yes, the question is did Pantex have a comprehensive program at any point in time, and I would say that given contemporaneous audits done by outside reviewers, the answer is no.

And again, I don't think the historic facts back up that assertion, and I don't think that should be used as compelling evidence for the NIOSH conclusion for Pantex.

MR. ROLFES: One could say that current operating sites, you know, both in government industry and private commercial industries, one could make the same statement, that there isn't a comprehensive program, because not every single thing is monitored.

MR. FITZGERALD: Well, I think you're changing the subject. I think what we're saying is that putting forward or advancing the assertion, that there's compelling evidence sufficient to justify this overall conclusion, this basic conclusion,

based on these descriptive memos, and an understanding of the basics of both a comprehensive radiation protection program and strict requirements of nuclear weapons, so forth and so on.

I think the burden's on NIOSH to back up that statement, that in fact the rigor of the program at any particular time during its history could be termed comprehensive enough to be relied upon in that degree of rigor, particularly --

You know, this is not -- Mark, this is not the sealed source program wasn't followed, or you know, maybe your ALARA program wasn't written up well. These are findings straight to the dosimetry program and recordkeeping program, and staffing to do swipes and staffing to do contamination control, air sampling.

I mean this goes right to the heart of what is pertinent to the SEC, which is, you know, if you're going to look at the

backdrop of the rad protection program, you'd want to be assured that those elements of the rad protection program were in fact operating and running.

These findings are pretty damning, quite frankly, and you know, not to have, you know, to have one or two rad techs for contamination control, which is what the Tiger Team was concerned about, you know, was a real problem. You couldn't do it with that few people, and they weren't even trained to do it.

MR. ROLFES: I disagree with you a little bit there because, as you were talking about the GAO report from 1990, and I may have seen this report. I know there's quite a bit of documentation regarding the tritium incident in 1989.

But you know, the failure of the staff to prevent a release of tritium is, you know, it's a concern obviously for operations. But it's not necessarily a concern for us in

the dose reconstruction process.

The reason is we have a pretty large set of bioassay data from the people involved --

MR. FITZGERALD: Exactly, exactly. You're making my point. You don't need to rely on the rad protection program. You don't need to rely on diamond stamp. You don't need to rely on assumptions about what operationally was done. You need to rely on the data. That's exactly what I'm saying.

I'm walking through this and saying that it's equivocal, meaning that yes, you are putting those on the table, and I'm trying to take them off because frankly one, it changes the subject, and I've said that a number of times, because the real subject is the data and the information, the bioassay information that guides this.

The second issue is I think on all these points, I can make a counterpoint that says even if you want to rely on those, I

don't think that's well-founded. But I would first argue I don't think you should rely on that. I think those are subjective, interpretive, non-evaluative pieces of information that don't necessarily get to the heart of the matter on the SEC.

MR. ROLFES: Since you had interjected after I said bioassay data, there's you know, there's quite a number of reports as I said. Just about everyone we speak with during the telephone interviews who's a claimant mentioned the 1989 incident, whether or not they were directly involved.

MR. FITZGERALD: Well, why not? They won't mention the 1963, because not too many people were left that would have been working in '63. Yes, I'm just saying that yes, that people are going to mention '89, because the workers that you're talking to, that would have been something they would have been involved with or been at the plant at the time.

People remember the nearest, most recent event, which would have been the '89 event. You're going to find very few people that can account for the '66 or '63, whatever it was --

MR. ROLFES: '61.

MR. FITZGERALD: '61, because they're gone or they won't be available to talk. That very well, they might have had a story that was much more lurid then the people who are telling you about the '89, but we'll never know, because they're not around anymore.

So I just want to be careful with being, you know, I know this is a good faith effort, to try to figure out where do we have the data. But I think we've got to step back some time and say well, people are talking about the '89 incident, and we have all this information and all these samples and everything, and geez it looks bad, and everyone says it looks bad and they changed a

lot of things right after that because it was so bad.

But it was the most recent incident of this kind. So therefore, it's data rich and it's easy to say let's just use that, because it just looked -- it just appears to be bad, and we can't find anything else to suggest it wasn't the worst.

When we get down to this issue, and it's sort of like looking for a needle in a haystack when we were in Germantown, because you know, I think most of the stuff we had seen and most of the stuff you had seen too. But we found something that was kind of, you know, was interesting to me.

It was an average depleted uranium air sample, that was an averaging of depleted uranium air samples for the 28th in '89, and I also -- well, that was one document. But I also found an average uranium air sample for a weapons systems disassembly, and the average for the one in the 60s was actually higher by

a factor of two, I think. I was trying to get that cleared for this meeting. I couldn't get it cleared.

But it was higher by a relatively significant factor. I can't remember if it was 50 percent or double the B28. And you know, there isn't a whole lot of data that one can hang their hat on at Pantex. I think both you and we have searched high and low for something like that.

But even if I could not put my finger on this, and it's just a piece of data. Who knows, and we may have arguments on that. But it's indicative of this situation, where you have settled on the '89 set of bioassay data. Yes, there's a lot of data. It's a lot of data. It's more recent. You have a lot of interview information, because workers were familiar with that particular incident.

But how can one assume, without something more corroborating, from the standpoint of actual data, that these prior

systems, you know, I'm not going to mention the system from the early days, because I'm not quite sure yet whether that's extensive or not. But whether it is a system that rivals if not exceeds the B28 that you're using, that disassembly process, and in the previous 30 years.

If so, then you're not bounding the exposures necessarily at all. That's the concern I have there for that one. But getting back on how we got there, getting back to the preamble, I'll leave that little kernel for later. Getting back to the preamble, again I think the rad protection program, we had and do have some of the best health physicists in the world in the DOE complex.

I guess I can say "we," I'm retired from DOE. But yet we also have some of the most challenging and frustrating health physics exposure situations as well, and a lot of people had trouble squaring that issue.

But that's all I would leave you

with, that you know, it's not a question of whether or not the expertise, the good intentions and design was there, or whether even the regulations and procedures were there.

It just sometimes didn't happen, because you had management decisions, you had staffing deficiencies. You had some paradigm problems, where people just didn't think there was a contamination issue, because they dealt with sealed sources all the time, sealed components, and so there wasn't that real drive.

Sometimes it just was that you didn't have a strong health physicist, who was exerting leadership and being supported by his management, his or her management. So there was a number of reasons. I'm just saying that you've got to be very careful on the rad protection. Moving on to data gap summary --

MR. ROLFES: To get back to, before we move on --

MR. FITZGERALD: All right.

MR. ROLFES: You had identified some of the independent reviews of the Pantex plant, and we've also pointed some out as well.

MR. FITZGERALD: Sure.

MR. ROLFES: And I've got a couple of statements here regarding, you know, some independent audits that were done. I think one of the earlier ones was done by the Office of Military Application. These are in the --

MR. FITZGERALD: What year?

MR. ROLFES: 1967, I believe it was.

MR. FITZGERALD: Now you have to clarify. Military Application was the owner of the Pantex operation. They were out of the Defense Programs portion. So you know, everything's not quite as independent as --

MR. ROLFES: As independent.

MR. HINNEFELD: It may or it may not be. This is an owner audit, and

Albuquerque may in fact be, it may be the Health and Safety Branch of Albuquerque, which may in fact not be in the same organization. You don't know that it was independent. It may not be as independent.

MR. ROLFES: Okay.

MR. FITZGERALD: But I'll grant you. The definition I used was outside the Pantex plant. So that, I guess from that standpoint, it's more independent than an internal audit. But go ahead.

MR. ROLFES: I just wanted to read some of the statements regarding, you know, shipments of materials coming from Rocky Flats. This is one of the things that we focused on. We were focusing on some site expert interviews as well, to make sure that we looked into any exposure potential for materials coming from other sites.

We basically heard from individuals that materials were flagged upon receipt to determine if there was any

contamination, and if contamination was present, it would need to be removed before the materials would be send back to the shipper.

Some of the statements from, this is SRDB 14207. It's in my report here on page three. It says "Our history in performing these tests regarding swipes over the past 16 years, and this was written in December of 1985, has not indicated any occasional or contamination was discovered, which might have been a personnel hazard.

From the health protection survey report of the Pantex plant in December of 1967, there are some statements. I've just pulled out a couple of statements here, but this says "Personnel exposure control and radioactive contamination control are excellent. Nuclear components are surveyed for loose contamination upon arrival at the Pantex plant, and rechecked as they are assembled into weapons.

"During disassembly operations, contamination checks are made at each step, where there is a potential for loose radioactive material. Routine area surveys are also made in locations where radioactive material is handled or stored. Records indicate that very little, if any, contamination is detected, and weapon components do not normally present contamination hazard.

"If the unit should be involved in any type of unusual incident, a special survey would be made and extra precautions would be taken, as appropriate." My last bullet here is "The bare samples or contamination survey should indicate the potential for internal personnel exposure. Special bioassays would be made.

"A review of air monitoring results for the past year indicated excellent contamination control in all areas." That was from 1967 as well.

CHAIRMAN CLAWSON: Now all three of these that you just stated were in-house; correct?

MR. ROLFES: These were health protection survey reports of the Pantex plant, and I'll have to take a look back at the source to make sure that I have the correct --

MR. HINNEFELD: '67 was the Office of Military Applications. I don't think we should consider that in-house.

CHAIRMAN CLAWSON: Well, I just see down at the bottom "Health Protection Survey Report."

MR. HINNEFELD: Correct. That's the title of the report. But we don't know right now where it's from.

MR. ROLFES: I can check on that if you'd like.

CHAIRMAN CLAWSON: Yes. I can -- so as soon as those objects got into Pantex, they were surveyed, is what you're saying?

MR. ROLFES: That's correct.

MS. ROBERTSON-DeMERS: This is Kathy DeMers. I wanted to point something out, and just for your reference, these sheets, these shipment sheets, which came from Y-12, are available on the O: drive, under SC&A Retrieved Records, Y-12. But we have shipment records where we had detectable contamination removables leaving Y-12, going to Pantex.

I think you should consider these, because some of this removable contamination can get up to about 1,000 dpm per 100 centimeters squared. So things coming in were not always pristine, or at least at the point where they left Y-12, they were not pristine.

MR. ROLFES: I've seen documentation of the same, Kathy, and also I've seen some documentation of the safe, secure trailers having contamination in them as well. So I am aware of that. So thank you.

MS. ROBERTSON-DeMERS: Okay.

You're aware of those documents, that you can go and look at them?

MR. ROLFES: Yes.

MS. ROBERTSON-DeMERS: Okay.

MR. ROLFES: For the health physics survey report of the Pantex plant, I have the individual's name, but I don't have the organization. So it's probably out of the Albuquerque Operations Office. I can clarify that. Let me see if I can pull up the other reference here. Bryce, are you out there on the phone still?

MR. RICH: Yes, I am.

MR. ROLFES: Do you recall, I have the individual's name on the report from SRDB 13310. I don't want to say the individual's name, but do you happen to recall where that health physics, health protection survey report of the Pantex plant is?

I want to say that the individual was out of Albuquerque Operations office. I'm not sure. I know he also had done some

analyses, and health protection survey reports of the Iowa Ordnance plant.

MR. KATZ: Jenny, we're talking about an author of a governmental report. Is there a Privacy Act concern?

MS. LIN: There shouldn't be -- it's the author.

MR. ROLFES: Okay, fine. Yes, the individual report was offered by Claude Davis. So I know I've seen his name on several reports for various sites. So I don't think he was limited to the Pantex plant, because he was auditing other sites. I'd have to --

MR. RICH: No, no, he was not, and I don't remember either, and my computer's in the shop right now. So my database is not available to me.

MR. ROLFES: Okay. Maybe the Office of Military Application -- Bryce, do you recall the Office of Military Application reference that I'm referring to? That might have been maybe later, in 1980 perhaps?

MR. RICH: I think so.

MS. ROBERTSON-DeMERS: Mark, there was an audit from OMA.

MR. ROLFES: Yes.

MS. ROBERTSON-DeMERS: That occurred in 1981.

MR. ROLFES: '81. Okay, thank you. I don't know if we've mentioned that one in here or not, but it was in my head. Anyway, I guess that's sort of besides the fact.

MR. FITZGERALD: Mr. Chairman.

CHAIRMAN CLAWSON: I just wonder when we quote things like this, it would be a very good to know where they're from, and I think you ought to quote some of the negative ones in there too. But I know when you're trying to make a point there.

MR. ROLFES: Sure. Well, we basically -- SC&A has focused on the negatives. We've focused on all of them, I think.

CHAIRMAN CLAWSON: I wouldn't say that one. I think --

MR. FITZGERALD: Well, let me clarify. The reason we cited the negative findings is because you're taking credit for the comprehensiveness of the radiation protection program historically at Pantex. I think what we wanted to provide some perspective on is that others have found that the programs apparently weren't as comprehensive as is labeled here.

So but again, I mean I think we can go down this tangent. I don't want to go down a tangent. I just want to point out that one, I don't see how any of this bears on the central question of the SEC at Pantex. And two, I think we have spent about a hour and a half raising some honest disagreements and factual problems with the compelling evidence, as you term it, in the paper that supports the conclusion, using these sources or this backdrop. So but let me continue.

CHAIRMAN CLAWSON: Okay. How about if we take a 10 or 15 minute break. It's about 10:30.

MR. KATZ: How about we keep it to ten. I'm just thinking Mark has to leave at 2:00, and we need to make the most use of his presence.

MR. FITZGERALD: All right.

MR. KATZ: Sounds good.

CHAIRMAN CLAWSON: Let's take a ten minute break.

MR. KATZ: Okay. The phone's on mute, but I'm not cutting it off.

(Whereupon, the above-entitled matter went off the record at 10:33 a.m. and resumed at 10:44 a.m.)

MR. KATZ: All right. This is Pantex Work Group. We're just reconvening after a short break.

MR. FITZGERALD: Okay. I just want to wrap up the comments on the preamble piece of this, and the data gap summary, I

think basically Mark, what you basically conclude there is that, you know, given the weapons assurance program, the radiation protection design, et cetera, that any gaps would be more in the field data and not in the event-driven bioassay data.

That's why I spent some length to dispute the validity of that backdrop of programs, because you very clearly say that you can rely that either event-driven bioassay was or wasn't done, because you have faith in those programs. I'm saying I don't think that faith is well-placed because one, programs may not be implemented, but well-intentioned people think they are.

And the other thing is I think we've disputed, at least in a good faith effort, that it's equivocal, that you can rely on the rad protection program comprehensiveness, and the fact that procedures were implemented as stated, back in the day.

So you know, it's not spending a lot of time being spiritual or philosophical here. You really base your conclusion in this, that you can rely on event-driven bioassays being performed or not performed, because you have faith in those programs and how they ran them.

This sounds a lot like what led me to suggest to Jim Neton that we have this discussion in Santa Fe, that you know, that struck me at Mound as not appropriate, and we had the discussion.

He agreed that yes, you know, under the EEOICPA program, NIOSH had to hew to a quantitative approach, and not in fact rely on a program on, and in that particular instance, and I think we we're back in that same place in this degree.

So in terms of data gap summary, obviously we don't agree with that conclusion, based on weapons assurance information and the so-called comprehensive rad protection program

design. So I just wanted to make sure that's clear, that you know, when we get to this bottom line, that's why we have problems. Now before --

MR. ROLFES: Before you move on, can I respond?

MR. FITZGERALD: All right.

MR. ROLFES: We can't rely solely on the procedures and programs. We don't do that. We look at the data that we have available to us. We pay attention to what the worker says in their claim forms and in their telephone interviews.

We've held multiple outreaches for several years at Pantex, to make sure that we have heard everything that we can possibly get from the workers, in the preparation of our Technical Basis Documents used for dose reconstruction.

You know, we have indications that bioassays were collected in the early 60's, late 50's. They were collected for a reason.

We might not know what the reason is, but we have that data available as well. The sets of bioassay data aren't as large as some of the more recent sets, but that doesn't prevent them being used for dose reconstruction.

We're not saying that, you know, policies and procedures have to plant work perfect. That's why we're doing dose reconstructions today. We have indications that things worked though. We have indications that, you know, significant events were appropriately observed.

Data was collected, and the information that we have available to us we feel is comprehensive in the ability for us to use it for dose reconstruction. In the example for the 1961 cell incident, where there was a plutonium release, that was a big incident obviously, a very big concern.

There's actually a radiation safety and decontamination plan, as well as bioassay data for the three individuals who

were directly involved, in that the subsequent radiological assistance team members that were involved in basically characterizing the cell area and involved in the decontamination of the cell.

There's, you know, we can't take one piece by itself, and that's the bottom line. We have to use multiple sources and consider all sources of input and data, to come up with our approach, and to come up with the most complete picture.

MR. FITZGERALD: Well Mark, let me respond, because I think you've said this several times now.

MR. ROLFES: Sure.

MR. FITZGERALD: I have no problems with a comprehensive approach of doing dose reconstruction. The central question before the Work Group, however, is do we in fact have sufficient information that would support dose reconstruction, in the history of the Pantex plant? So yes, you

know, I understand where you're coming from on dose reconstruction.

But the SEC question is a little different, and I'm concerned that because of the lack of data, you're pointing to and relying upon program assurance, in a way which I think isn't well-founded. That's my message to the Work Group, is I don't think that's going to satisfy the Board's needs, to see if a good argument for dose reconstructability.

So I'm going to leave it at that, because we've been back and forth on this. I think, you know, I'm just concerned that, as you say here, "The previous discussion above, related to the demands of the weapons assurance and comprehensive rad protection design, is intended to clearly indicate that any gaps are in the field data, and not in the recorded," and this is the event bioassay data.

That's an unequivocal statement, saying that because of the rad protection

program and because of weapons assurance, we can state that any gaps would have to be in the field data, and certainly not because they did or did not take bioassay data.

So I'm just concerned about these categorical statements, because I think it suggests a position different. When you explain it, it comes out more equivocal, qualified. But these statements don't leave any room for that.

Let me finish, though, because I think we're going to be short on time. I didn't realize you were leaving so early. So let me get down to the end. You did spend a good amount of time writing this out, so I want to make sure that we don't miss anything.

You know, in the end, there's sort of a philosophical discussion. What you cite here is a legitimate question. I'm just quoting from the March 10th position paper. "A legitimate question can be asked. Now that the experience of the EEOICPA program is

somewhat mature, how would a responsible, professional design of radiation safety programs today for facilities starting operations similar to that of Pantex?

"Would a routine bioassay program be required of all 3,000 people throughout the plant site and on what frequency? Would the program be different on the basis of protection of personnel, as opposed to providing enough data to satisfy all parties from some future compensation program?"

It goes on to say "I would like to believe" -- I guess this you and Bryce -- "that personnel protection would be served without bioassay, providing you with no evidence of uncontained contaminants in the workplace," and so forth and so on.

I guess I would turn those questions around, because I thought about that. It was an interesting thing. I haven't seen this in a SEC discussion before. I would turn those questions around and ask is it not

the purpose of the SEC process, however, to acknowledge historic circumstances where the design or records of the dosimetry program in fact fall short of supporting dose reconstruction with sufficient accuracy?

I mean isn't that what we're really talking about? Not so much, you know, whether we would design it today and, you know, is it not understandable that, you know, they didn't design programs 20, 30 years ago, just to make sure we, in EEOICPA, got the right data.

So what? That's why EEOICPA was set up to legislate the way it was, was the understanding that in fact these programs would fall short. You'd find instances where the recordkeeping would be inadequate, the dosimetry program for that. That was the way the program was assigned.

The SEC process, I would have to believe, is set up to capture those exceptions, where for whatever reason, the

data doesn't come forward, you know. The design of the program wasn't there, you know. So yes, they certainly did not design it to be captured, and that's why we're here today, trying to debate because it's not there, how do we actually address it. So I guess I don't understand that.

And should a -- I guess the last question I have is should a facility's program get a pass, simply because the health physicists sort of get together and agree that while documentation and data is lacking, we all sort of believe that it was a relatively tight program, and you know, deserving of that recognition.

I have a concern over that too. I mean it's sort of -- these comments at the end sort of suggest all the HPs got together and looked at Pantex. Yes, it was a tight program sealed components, sealed components, diamond-stamped, and you know, why not let that one go?

I guess my concern is that no, this is not a gestalt with the HP community, on a sort of professional judgment basis. This is a statutory-based, regulatory based program that looks at the data and allows the data to define whether or not the sufficiency and accuracy is sufficient.

That's kind of what we have to judge. So, you know, we can ask these questions and they're useful questions, I think, on the side.

But again, like everything else we've talked about this morning, I don't see the relevancy to NIOSH and the Board, to settling the question of, you know, can you estimate doses to depleted uranium over the years in various campaigns, with a sufficient accuracy that would give you an expectation that you can dose reconstruct or not.

I just don't see how any of that adds up to that. So I will leave it at that and, you know, I think this could be a forum

all by itself, talking about the philosophy of, you know, how one should look at programs and weapons assurance and all that. But we need to, I guess, move on to more specifics.

MR. ROLFES: Before we move, I agree with what you said, but we were asked some subjective questions. So we prepared subjective responses. The details of how we have evaluated the Special Exposure Cohort that was proposed to us is in our Evaluation Report, and the information on how we use information from claimants' files, air monitoring data, our bases for intakes, are all documented in our Site Profile.

You know, we can disagree on, you know, interpretation of audits, records. We've got to keep focus, though, on you know, interpreting the data. Are there shortcomings in the specific data that would prohibit us or prevent us from being able to bound doses under the Special Exposure Cohort.

That's really the focus of, you

know, what we should be discussing, rather than, you know, our interpretation of these records versus, you know, your interpretation.

MR. FITZGERALD: I think we can declare victory. I'm glad you said that. That's kind of what I was driving at, and so you know, yes, we should be focusing on the data and not trying to interpret these program documents, okay. For the record, I think we have agreement on that point.

So therefore, these assertions that find their way into all the preceding documents, I would question, for the Board's sake, that I don't think that they should be given much weight.

Now just moving on though, in terms of the exposure potential issue for internal emitters, I do want to make sure, with your leaving early, that we at least walk down the data adequacy and completeness. It took a legendary amount of effort, three months. It was finished in January. So I

apologize that you got it last week. But that was not by want of effort.

So you know, what we want to do in a little bit is, I think, Kathy and maybe Ron Buchanan. I think he did the external, just outline where we came from in that document, knowing that you're not going to have much to say at this point. But just making sure that if you have any questions or clarifications, you have that opportunity before you leave.

But in terms of the internal emitters, we had this on the agenda, you know, these tactical issues are pretty well laid out. But for uranium, yes. I think this is the central issue. Uranium and possibly thorium are the central issues from our standpoint. They're certainly questions that could be clarified by the others, but I think this is the big stopping point.

I think it's clear, and I don't think you disagree, that the depleted uranium figures in a number of systems over the years

from the early days, 60's on forward, you have proposed the use of the '89 incident in bioassays. I understand where that came from, but I would question whether you have sufficiently corroborated that it's bounding, and I think this last swing in Germantown, as I alluded to, I didn't get that clear.

But there's some data that would suggest -- and I haven't had a chance to go any further than that, but we're going to go down to Pantex -- that would suggest that previous systems may in fact have been dirtier.

I think that would be a useful inquiry to pursue between us, because I think again, that backs up our concern and questions about whether the '89 set of your bioassays is going to be bounding.

You know, we had the concern before we found this little bit of data, because again, I don't think we've seen anything hard that -- whether it's air

sampling or whatever, that just would be the worse, and I'll leave it at that, because I think we've had that discussion.

Thorium, I think, there's enough sensitivities that I would not want to have that discussion here. But I think in Germantown, we ought to have a discussion of thorium. And perhaps Kathy, since she's got this clear data complete and she'll be more secure about talking about some of this than I would be, because I don't have that in front of me. I haven't had a chance to go through every detail.

Plutonium, I would like to suggest to the Work Group that be taken off the table, because I think, as far as an exposure pathway, I think those components, I think, a couple of incidents as the exception were sealed and not subject to exposure, and it was monitoring.

As far as STCs, I would suggest the same, that even though we have some

concerns over the fusion issues, I think in terms of sealed components. I think likewise, we have no evidence that they were present in anything but sealed components, as far as handling at Pantex.

So as far as the listing here, I would say our focus and concern right now is primarily depleted uranium throughout the history, different campaigns, and whether or not the '89 event, as we have said earlier, is bounding. We have issues of thorium, and Kathy may address some of that.

But again, I'm a little bit unsure about how far I can go on this. So I'm not going to go into any more detail. But I wanted to scope that out clearly. That's where we're at. Any questions on that? I know I kind of went through that quickly, but I think we kind of beat uranium around already this morning.

MR. ROLFES: As far as exposure potentials, I'd agree with you, and I think

that's consistent with our Evaluation Report and our Site Profile, you know. We have no indications of any kind of routine plutonium exposure potential. However, just because of claimant-favorability, we have put in plutonium intakes for essentially all operating time periods when plutonium was handled.

You know, this is a very claimant favorable thing, which we don't necessary have information to back up, that you know, these intakes occurred. Yet we assign them, just because --

MR. FITZGERALD: Yes, and we looked at that, and you know, we couldn't find and we looked. You're familiar with the same incidents, cracks, pits, et cetera, that we are. But beyond that, we couldn't find any evidence of a routine exposure pathway for plutonium or stable tritium compounds.

Although as an asterisk, you know, there's always been a diffusion question, but

I don't think it's a significant amount that I would raise in this context. Again on uranium, I think it's the bounding issue and the back extrapolation. I wouldn't want to spend a lot more time on that here, because I think we have spent a lot of time on that.

But we are looking for something that would corroborate that '89 is bounding, and what has been provided, I think, falls short of that, and what we have found, it may not be much, but it's sort of indicative that '89 may not be bounding, and like I said, as soon as that gets cleared by Germantown, I will send it to you, and the reference that goes along with it.

MR. ROLFES: Great, okay.

MR. FITZGERALD: Of course that's assuming you get it there.

MR. KATZ: Can I just ask a question about the '89 event?

MR. FITZGERALD: Yes.

MR. KATZ: You haven't seen

evidence that would be bounding, and you have found this evidence that you're concerned about --

MR. FITZGERALD: Oh, well --

MR. KATZ: But what, have you laid out somewhere what evidence you would consider corroborative?

MR. FITZGERALD: Yes, and it wasn't clear about Germantown.

MR. KATZ: No, on the other side.

MR. FITZGERALD: Oh, on the other side. You're saying you haven't seen anything that would be corroborative.

(Simultaneous speaking.)

MR. FITZGERALD: Yes, and I think we've articulated this before. What we would look for is exactly what Jim laid out in his presentation on exposure potential, you know. Can you in fact point to field data, and of course I think the answer is no.

It's either the air data. There's air sample data, but I think whether it's not

sufficiently representative data or may have, and this is something we have found, that a majority of those air samples, burnt dosimetry air samples, there were alarming samples, which is not particularly usable for our purposes of estimating how much was in the air.

But you know, Mark, if there's any way -- you know, we agree there's an exposure potential. I would disagree that it's intermittent or incidental. I think it was actually chronic, associated with those particular systems when they were being disassembled.

And you know, you can put different terminology, but that's, you know, that's fairly chronic while the workers are disassembling that system as they go through. So you know, you can pick your word, but I think that's pretty chronic.

If we agree that far, then the question is, you know, if there's no bioassay

data that's usable, and you've mentioned a few data points, and you know, I think there are some data points. But if there's not enough usable data that's reliable, then you go to the secondary source and say what's usable from the air sampling standpoint.

Then you go to is there anything that would be indicative from the smears. That's a little tougher. Then the source characterization, as I recall, is another source of information in terms of trying to characterize this thing.

If you go through all that, then I think it becomes more debatable, whether we have a situation where there isn't a good, strong basis for dose reconstruction. We get into that stage where you hear a lot about modeling and, you know, there may be a way to get there, but it's not from the traditional source of the data.

So I would like to think there's a way that there's some information beyond the

'89, that would allow the -- and we're getting down to specific issues now. If you could find an approach that would quantitatively bound your depleted uranium pathways. We agree they're there. We know when they happened. They have the dates of the disassemblies.

Then I think you've got a starting point, thinking now okay, what are your secondary sources of data? Is there anything that's reliable and that would be usable, something that would either corroborate, that no matter what we apply, '89 comes out the highest, or suggest that there's another data point, and I would propose this one I found for the 60's, actually appears to be higher. But I don't know. I haven't gone any further with it.

Or that there's just no way to tell, in which case I would say we may be in SEC space for the Work Group and the Board, in which case we probably need to focus on that

question the next time around. I think there's a lot of data gathering and thinking, but that's where I would think this would arrive, you know.

We looked at those options, we looked at those approaches, and you know, it's Door No. 1, Door No. 2 or Door No. 3. I'd like to think we can move this discussion forward, rather than being at loggerheads. Because I think we agree, there's an exposure potential. We agree that it's relatively chronic for certain systems.

The only question is we don't have bioassays for anything, reliable bioassays for anything but the '89 period, and that's why we're using what we have, and we have enough corroboration that that's bounding. So it seems like we're close but not there, and I just think that we can move it.

MR. ROLFES: I wanted to clarify reliable bioassays. We do have reliable bioassays prior to 1989, beginning in 1959.

The data set that we have is limited to about 10, 12 people at the time, though.

MR. FITZGERALD: Well, does that make it less reliable for dose reconstruction or SEC purposes?

MR. ROLFES: Not at all.

MR. FITZGERALD: So how come we're not using it as a part of the proposal?

MR. ROLFES: We can. We certainly can. However, the intakes that we currently have are, I believe, more claimant-favorable. Now there might be one time period, because at the laboratory that had completed the analysis, that had a higher level of detection or limit of detection.

So if we would use their limit of detection, it would result in higher intakes, I think, than our default. But it wasn't really much that would make a big difference of, you know, significance. We can certainly do that. We can certainly look back into comparing, you know, intakes.

I thought we had previously done that, looked at our intakes from the 1999 data set, in comparison to the earlier intakes, based upon the data.

MR. FITZGERALD: Well, I guess I would say on this last phase, as we're sort of getting down to remaining issues, this one seems like the big one to settle.

I think what I would offer is what we have identified in Germantown, and maybe we should take another look at some of these secondary pieces of data, and look at some of the sampling from the earlier years, and just see if there's any way to square this thing, you know, for the Work Group the next couple of months.

I mean it looks like Pantex, the site trip might be a little while. So there's certainly time to wrestle this thing, and see what we find down there.

MS. ROBERTSON-DeMERS: This is Kathy. Can I make a clarification on

something?

MR. KATZ: Yes. Go ahead, Kathy.

MS. ROBERTSON-DeMERS: You all are talking about 1989 bioassay data. The situation is that the incident occurred in 1989. The bioassay data was actually collected 1990.

MR. ROLFES: That's correct. Okay. The other sources of information that we've looked into, we have looked at the alpha air concentrations in the cells and we've provided a brief, three-page summary of the median alpha air concentrations from 1974 through 1987. That would be breathing zone samples, they're general area air monitoring results, and there's some uncertainty about worker location versus sampling location.

So we have looked at these. There's 4,500 air sample results. We've compared those to the intakes in our TBD. In addition to that --

MR. FITZGERALD: Let me stop you

there though, because this is a great lead-in, and I'm really conscious of your time. So I'm watching the clock.

MR. ROLFES: Thank you.

MR. FITZGERALD: Well, you know, two o'clock. We've got lunch in there too. Kathy is addressing this data accuracy and completeness, including air sample data. I'd like to just jump in there.

You've provided the lead-in to talking about what data do we have, how adequate is it, you know, this representative question that you just mentioned. I'd like to -- can we just jump into that, Kathy?

MS. ROBERTSON-DeMERS: Yes.

MR. FITZGERALD: Because I really think that that's where we're at, and excuse me for shouting a little bit, but I really want to make sure we have this discussion. I didn't realize this thing was going to end, or not end, but you know, sort of we're going to lose -- Bob, you're leaving at what time?

MEMBER PRESLEY: Two.

MR. FITZGERALD: Okay. Two o'clock becomes a milestone.

MS. ROBERTSON-DeMERS: And Mark and Bryce, there's some natural breaking points that I'll allow you to ask questions in here, but if you just kind of let me go through this, I'd appreciate it. Okay. We issued a paper on data adequacy and completeness.

This was tasked to SC&A during the May 4th, 2010 meeting. The report addresses both internal monitoring and external monitoring. So we usually do separate. However, this time we put it together.

In addition to our traditional reviews of looking at the data, we were asked to look at the completeness of the incident database, and whether the incident-driven bioassay program was comprehensive.

What we did on the internal side was we selected 42 Pantex claimants for

evaluation. We developed some selection criteria and I will refer you back to a table in the internal dosimetry TBD, Table 5-2, which lists job titles and descriptions of work for possible occupational intake.

What NIOSH has done in that table is they have broken up the Pantex population into three categories. There's Category 1, which they determined had the highest potential for intake. Category 2, which was intermediate, and then there was everybody else who was typically assigned environmental dose only.

In our selection of these 42 people, we decided that they had to work at some period of time during their Pantex employment in either Category 1 or Category 2. But we also wanted the individual to work at least five years during the SEC period.

We required that the people that we selected had a DOE response file from Pantex. What we did was since some assembly

workers worked exclusively, say, on the high explosive portion of assembly, we went to their CATI interviews and looked for some determination that they had actually worked with radioactive material.

We did end up losing a couple of our original people, to the fact that we believe they just worked with high explosives. The population was employed basically from 1951 through the end of the SEC period. When you go and you look at NOCTS, Pantex is kind of unique from other sites, in that they have a DOE response for the claimant, but they also have supplemental documents.

These supplemental documents that were pulled were pieces of documentation, pulled from the SRDB, which include monitoring data for that individual. This was something that apparently ORAU did. So if they had, for example, a log of uranium bioassay data with multiple names on a page in the SRDB, they would go. They would pull that page for that

individual and attach it to the associated claimant, okay.

Each of the supplemental documents, in addition to the DOE response file, was evaluated for internal monitoring data. The focus of the review was to look at the available in vitro and in vivo monitoring data. This, opposed to the assigned dose data for internal dose.

When we looked at our 42 individuals, we found that 39 out of the 42 had no in vitro data in their daily response file, and for the remaining three, we found that the bioassay data was incomplete in their DOE response file. We know that because we identified bioassay data from these supplemental files attached to the claimant.

Just to kind of give you a feeling for what this effort took, some people had up to 33 files for us to go through, to locate all of the in vivo and in vitro data.

MR. ROLFES: So Kathy, thanks. So

you can understand what we go through in the dose reconstruction process, then. Basically, what we've done, we noticed that DOE was not providing all information to us in their DOE response files. This is primarily related to pre-1989 bioassay data. The way it was stored, it wasn't necessarily stored with the individual's medical file, for example.

So what we did, we captured all of the available bioassay data, brought that back, put it in our Site Research Database, and then had ORAU go through in speedy-like link each individual claimant's exposure data, bioassay data, into their claim file in NOCTS, so that it was available for dose coworkers.

So yes. We noticed that there was information that was missing from the DOE response files, and took appropriate actions to ensure that we received that information, so that it wasn't excluded from the dose reconstruction process.

MS. ROBERTSON-DeMERS: So that

kind of gives you kind of a background. Now most -- like I said, most of the in vitro bioassay data came from this supplemental documentation that I'm talking about. With respect to in vivo data, those that were counted, that were involved in the in vivo program, we usually found some evidence of an in vivo count in their DOE response file.

Now we looked at, you know, between the 42 claimants, we looked at quite a number of files which I have listed in the back of the report. In some of these, some of the bioassay data, we had a difficult time interpreting the data, and this was as a result of limited or inaccurate personal identifiers.

For example, we'd have the right name, but the badge number would be off. Absence of bioassay sampling dates in some cases, and when NIOSH took the individual page out of some of these really long bioassay logs, they failed to bring over the column

headers.

So we had some difficulty in interpreting some of the supplemental documents from larger files. Those column headers are on the first page of the document; however, they're not carried through on every page.

MR. ROLFES: Right, right. You'd have to go back and look at the source document in the Site Research Database, to know what units you're referring to.

MS. ROBERTSON-DeMERS: Right.

MR. ROLFES: So Kathy, I have a quick question. You said something about the claimants were listed at the end of the report?

MS. ROBERTSON-DeMERS: No, the documents.

MR. ROLFES: The documents, okay.

MS. ROBERTSON-DeMERS: The documents that we looked at.

MR. ROLFES: Okay, thanks. Did

you provide a list of the claimants who you spoke with, or the files that you analyzed, so that we can take a look at the same pieces of information?

MS. ROBERTSON-DeMERS: Yes. Brad put that down as an action item.

CHAIRMAN CLAWSON: Okay. So you're going to provide a list of the --

MS. ROBERTSON-DeMERS: Of the 42 individuals.

CHAIRMAN CLAWSON: Okay.

MR. ROLFES: Thanks.

MS. ROBERTSON-DeMERS: Another difficulty we had was when we went into the DOE file, it appeared that the recording practice, and this is true for both internal and external, and I think Ron will talk some more about this later, for some years, we found that they were recording zero millirem, say for uranium and tritium, when individuals had no supporting bioassay data.

So we didn't really feel like we

could trust zeros for some years. Okay, and I'm going to refer you, if you all have the report in front of you -- it's going to be a little easier for you to follow the discussion if you go to Table 2, starting on page 28.

And what you have here is you have a listing of the radionuclides. We've given you the years during which those radionuclides were present at Pantex. We derived these dates from the Pantex Site Profile.

Then you have a column where you have years without, okay, addressing without bioassay data for our selected population, which is the 42. We went a little bit further and since we had pulled all of this data, we also included a column years without bioassay data for the Pantex population.

Now that's based upon the data that's available on the SRD that we identified as containing bioassay data. Then just as a reminder, we put the method that NIOSH uses to assign unmonitored or missed dose for the

various radionuclides. This is pulled from the internal TBD. So that might help you, as I go through this.

Okay. What I want to do is I want to talk about tritium first. For our selected population, both Category 1 and 2, we had no tritium bioassay for '56 through '71, '73 through '82, and '84 through '87. For four of our Category 1 workers, and this gets down to -- the reason I'm telling you this is this gets down to the dose reconstruction approach, which is heavily based upon these categories.

But for four of our Category 1 workers, in other words, they were Category 1 at some time during their employment, they had absolutely no tritium monitoring during their employment at Pantex.

MEMBER PRESLEY: Hey Kathy, this is Bob Presley. What year were they employed?

MS. ROBERTSON-DeMERS: I don't have it written for every worker, but the range was '51 through '91. Each individual

had to work at least five years.

MR. ROLFES: And keep in mind, for clarification, this is only out of the population that you selected of 42 workers. This isn't to say that there are no bioassay data during those years, because I know there are bioassay data pretty routinely in the 70's for tritium.

MS. ROBERTSON-DeMERS: Well, and let me walk through this, and then I've got a question for you on that. Okay. It's our understanding that Category 2 workers are assigned environmental dose for the period '56 through '91.

But what we found in our population was that Pantex felt that 88 percent of our selected populations who held a Category 2 job, they felt like they needed bioassays. So they gave the bioassays.

So in essence, assigning an environmental dose for Category 2 workers may not be adequate, because at least Pantex felt

that they were being exposed to tritium. Now the bioassay results were '62 through '72, '83 and '88, were limited to one sample per individual, with a few exceptions to that.

Some people had two samples in a year. So they were on an annual frequency, and the routine monthly sampling for tritium was not noted in our population until 1991. I would raise an audit finding by the Amarillo Operations Office for Amarillo Area Office in 1982, where they questioned the usefulness of annual tritium bioassays.

One of the problems we had with the early tritium data, I'm talking in the 60's, was that we noted, when we looked at the bioassay data, that we ran across a situation where the sample result was equal to the background result, which was tap water. Or in some cases, every sample that was analyzed for a given day had the exact same bounding. This struck us as odd.

MR. ROLFES: Kathy, while there's

a break in your --

MS. ROBERTSON-DeMERS: I've got one more bullet.

MR. HINNEFELD: Just let her talk.

MR. ROLFES: Sure.

MS. ROBERTSON-DeMERS: Okay. We also struggled with the MDC, which I am assuming was used to develop the triangular distribution for the pre-'83 data, because what we did see in the background sample data was a result of up to 17.5 microcuries per liter. So we definitely had some questions about the adequacy of some of this data, and I have a question for you, Mark, before you get into this.

Okay. You say that you have data for the 70's, I'm assuming '73 through '82, because we found some data in '72. However, I have been unable to locate it, and if you have it, you know, we would be happy to look at it.

You know, I know that there is a

file out there that states, I think it's called bioassay data from '72 to '82. However, when you look at the data, that bioassay data only covers two years.

So I'm not sure where this, where the data in this time period is coming from, although we did find a couple of people who had positive tritium doses in that time period.

So some sort of bioassay must exist, and I'm assuming it's a matter of we didn't find it. I'm going to open the floor to you for questions.

MR. ROLFES: Okay. To get back to what I wanted to clarify earlier on, you had mentioned the Category 2 workers were not assigned any intakes. They were just assigned environmental doses; is that correct?

MS. ROBERTSON-DeMERS: That's what we had pulled out of the TBD.

MR. ROLFES: Okay. I wanted to pull up the TBD. If you go to page or Table

5-19; it's page 48 of 72 of the internal dose TBD for Pantex, it has, you know, Category 1 workers, such as production technicians, quality assurance technicians, radiation safety technicians and assemblers/disassemblers.

We've got various time periods and intakes of various radioactive materials, including tritium, uranium, thorium, plutonium and radon. Now for the Category 2 worker s, we have information from the same time periods, but are only assigning ten percent of the values of the highest exposed individuals. So we're not assigning environmental levels. It is lower than the Category 1 workers.

MS. ROBERTSON-DeMERS: Okay. If you go back, I don't know if you have the TBD in front of you.

MR. ROLFES: I do.

MS. ROBERTSON-DeMERS: Look at Table 5-19.

MR. ROLFES: That's where I'm at.

MS. ROBERTSON-DeMERS: Okay, and there is only an intake assigned for production techs, QAs, RSTs and assemblers/disassemblers, and no other tritium is listed. So you know, it could be, you know, that we made the wrong assumptions. However, it's definitely not listed in that table.

MR. ROLFES: But if you go down, this table was numbered. If you go down to line 10, it says Category 2 in Table 5-2 were at some risk of exposure, from 1961 through 1993. We are assigning ten percent of the values in Row 2. So --

MS. ROBERTSON-DeMERS: Okay. That's a DU or U?

MR. ROLFES: For DU, for depleted uranium or uranium.

MS. ROBERTSON-DeMERS: Yes, and I'm talking tritium.

MR. ROLFES: Okay. For tritium, if you go back, we've got the highest recorded

annual doses for any year in a previous table for tritium. Let me see if I can find that table for you.

What we do in the dose reconstruction process, if the individual doesn't have tritium bioassay data, typically, we have been using the highest recorded tritium dose for any year when we have data, with the exception of the 1989 incident.

The 1989 incident with the tritium release was a different exposure potential altogether. In the dose reconstruction process, we'll either use the individual's own data, or if they don't have data, we have in the past for overestimating dose reconstructions, assigned 123 millirem per year, because that was the highest recorded tritium dose for any year that was monitored.

MS. ROBERTSON-DeMERS: Okay. Well, your table in the back is not clear on that.

MR. ROLFES: But yes, I

understand. We are using a slightly more claimant-favorable approach than what's in our TBD. So we can fix that if you'd like.

MS. ROBERTSON-DeMERS: Well, I would assume if I were a dose reconstructor that my primary reference would be this table as well.

MR. ROLFES: That's correct.

MS. ROBERTSON-DeMERS: Now are there any other questions?

MR. ROLFES: I don't think I have any questions. I really haven't gotten the opportunity to review your report, and certainly after we've had the opportunity to review the report and look at the data for the 42 listed individuals, we'll work to prepare a response. If we have questions at that point, then we'll probably ask them.

MS. ROBERTSON-DeMERS: Does anyone else have any questions on tritium?

CHAIRMAN CLAWSON: Not at this time.

MS. ROBERTSON-DeMERS: Okay. I'm going to move on to uranium. For our selected populations, we had no bioassay data for 1951 through '64, 1966 through '67, 1969 through '75, 1977 through '80, and 1982 through '89.

For our population, the peak year of monitoring or the peak years of monitoring were 1990 and '91. That's within the SEC period. We did not look beyond the SEC period.

MR. FITZGERALD: Kathy, Mark didn't you mention a '59 data point?

MR. ROLFES: Correct.

MR. FITZGERALD: I think he talked about it earlier today, some bioassay samples from '59?

MS. ROBERTSON-DeMERS: Yes, but not within our population. If you look at the total Pantex population in my table, you'll see that '59 is not there.

MR. FITZGERALD: Okay. So that just means you didn't use it in the --

MS. ROBERTSON-DeMERS: That means we didn't find it in our population.

MR. FITZGERALD: In your population, okay.

MR. ROLFES: Yes. The 40 employees didn't, weren't represented among the people that were sampled in the '59 data.

MS. ROBERTSON-DeMERS: Okay. Just to let you know, of the four samples that were collected in '65, '68, '76 and '81, three of those samples were collected from Category 2 workers, not Category 1.

The other thing that we observed was most of the uranium bioassay data collected from '83 through '87 was collected from Firing Site 23 cleanup workers, and not assembly/disassembly workers.

MR. ROLFES: Right. There was a much greater potential for exposure at the firing site. That was the contained firing site, and the reason for that, the hydroshots, which were previously done open air, those

types of operations were done within a containment area, and basically the same source-term existed. However, it was all enclosed within a confined area.

So that would have increased the exposure potential, because it basically would have distributed uranium on a much smaller area or within a much smaller area, and you can see that in the bioassay results, because those bioassay results are some of the more elevated results.

MS. ROBERTSON-DeMERS: Okay. Continuing, of the 32 workers that held a Category 1 position during their period of employment, 18 of these workers had no uranium bioassays at all, meaning throughout their employment.

Then the last thing I wanted to bring up is -- it's kind of something that's a little confusing to us. As you know, the back extrapolation technique that's going to be applied for depleted uranium is based upon

some 300 plus samples that were collected as a result of the B28 incident when these samples were collected in 1990.

We looked at the results as they were provided from the Y-12 plant, and those results were recorded in dpm. Then we looked at the results as they were reported by Pantex, and this is in SRDB 82838, and we noted that the same result number was used.

So if the individual had .02 dpm for the Y-12 results, .02 was recorded in the log. However, the units were now dpm per milliliter. This was somewhat confusing to us, because in order for them to be identical, that would mean that Y-12 only analyzes one milliliter of the sample.

Before this data gets used for back extrapolation, this discrepancy in units has to be addressed, and Mark, I'll let you ask any questions at this point.

MR. ROLFES: I have no questions. We'll take a look at the report and prepare a

response. Without having the data right here in front of me, I haven't had the opportunity to look into the raw results, to go back in response to your report.

MS. ROBERTSON-DeMERS: I would also refer you to SRDB 14196.

MR. HINNEFELD: Kathy, this is Stu Hinnefeld. You gave a different SRDB number earlier, didn't you?

MS. ROBERTSON-DeMERS: Yes. These are the two documents.

MR. HINNEFELD: Okay.

MS. ROBERTSON-DeMERS: So one of them is the Pantex results, and one of them is a letter from Y-12.

MR. HINNEFELD: And the first number you gave?

MS. ROBERTSON-DeMERS: 82838.

MR. HINNEFELD: Yes, and then 14196.

MS. ROBERTSON-DeMERS: Right.

MR. HINNEFELD: Okay, and the

units -- I'm sorry. I missed the units from the Y-12 report.

MS. ROBERTSON-DeMERS: Y-12 reported their units in dpm.

MR. HINNEFELD: Just dpm?

MS. ROBERTSON-DeMERS: Right.

MR. HINNEFELD: Okay, and so, all right. Let's move on to plutonium. For our selected population, the data was available for 1961, 1968, 1981 and 1982. We had one sample for each of those years. So a total of four plutonium samples for the population. Two of these individuals fell into Category 1, and two fell into Category 2.

Okay, 30 of my 32 Category 1 workers had no plutonium bioassays. So in other words, those four samples were essentially two workers, or actually I take that back. Another interesting thing that we noted was that the plutonium data from '61, '68 and '78, was not a 24 hour sample, but a spot sample.

This would influence your detection capability for plutonium. Really, that's all we have to say about the plutonium, unless somebody has questions.

CHAIRMAN CLAWSON: No.

MS. ROBERTSON-DeMERS: No? Thorium is short and sweet. We had no thorium bioassay data for our selected populations. I believe we did find one thorium bioassay sample for the entire Pantex population in 1983. One of the things that, I guess when the Delphi Group came in and updated the Pantex dosimetry records, they -- are you still there?

CHAIRMAN CLAWSON: Yes.

MS. ROBERTSON-DeMERS: Okay. They provided some individuals with like a questionnaire. One of our concerns was well, maybe nobody worked with thorium. So we went back and we looked at those questionnaires where they were available, and sure enough, there were individuals in the population which

mentioned thorium and working with it. That's basically what we found with thorium. Any questions?

CHAIRMAN CLAWSON: I don't think so at this time, Kathy.

MS. ROBERTSON-DeMERS: Okay. Now as I previously said, it's not a routine part of our data accuracy and completeness review, but we were asked to look into incident reports, and whether there was bioassays supporting those incidents.

There is a list of incidents in the back of the report that we looked at. It gives you the dates, the description, the incident, where we got the reference to the incident, the type of exposures, some comments, and then the SRDB number, which we referenced for that incident.

With Pantex, what we had was a couple of different sources, okay. We had a couple of different lists of incidents. We had what's called the radiation safety

incident reports, and that was derived from the Radiation Safety Department at Pantex.

Evidently, NIOSH also compiled a list of incidents, or at least they tagged or included an SRBD number associated with various incidents. We also had a list of some incidents in the back of the safety information document. Then finally, there were incidents that were not necessarily listed on any list, but were available in the SRDB.

So we went through those incidents, and we looked at them. We identified 62 incidents, SC&A identified, from all sources. We found that 23 of these incidents were really from potential external exposures. 33 were from internal exposures, and one was related to an environmental exposure. We kind of threw, I believe, the environmental exposure in with the internal exposures.

If you have the report in front of

you, I would refer you to Table 1 on page 24, and what we did was we tried to list the number of incidents in five year blocks. You have the number of incidents from the Radiation Safety Incident reports, which is a NIOSH document.

Then you have the number of incidents from the SC&A list, and that is pulling from as many incident sources as we can. One thing I would like to point out to you is for the 1991, and actually it should be through '95 time period, you'll see that there were 64 incidents under NIOSH.

But we stopped our evaluation at the end of 1991. So the number listed for SC&A is only for 1991. But generally, you will see an increase in incidents over time. There was a peak in 1996 through 2000. A lot of that was due to the fact that they started including wound incidents into their incident reports.

So you know, what this says is,

you know, we probably are in a situation where the definition of incidents has definitely changed over time at Pantex. Let me give you an example of how the definition of an incident has changed. Now we've been talking about the 1989 incident, depleted uranium, and how that 1999, or '89 sorry, '89 incident, resulted in a shutdown of work.

It resulted in follow-up in vivo counts. It resulted in these 1990 bioassay data. However, what we haven't talked about was the disassembly of this unit had been going on for a number of years, and the same situation existed before 1989.

So the situation went from routine to an incident, even though the conditions were the same. Now I'm just going to try to get down to the bottom line here. We have 15 incidents that were identified by SC&A, that were not mentioned on the incident list.

While incident-based bioassay data existed, the definition of an incident changed

over the period of operations. Operational occurrences, defined as routine in the early years, rose to a level of incident in the late 80's and 90's. This resulted in an inconsistent collection of bioassay data for incidents.

A review of the bioassay data that was available against the incidents and, you know, there was -- we gave it some level of plus or minus date from the incident. What we found was there were 13 incidents from the period of '60 through '88 that had no corresponding bioassay data.

So it is evident that internal dose records may be missing, and that there are gaps in the data, even though they had an incident-based program. So these are true gaps; these are not baseless gaps, as indicated in the NIOSH response.

This definitely led us to questioning how effective their incident-based bioassay program was. As far as trigger

levels for incidents, we have some definitions of an incident in 1991, but we were unable to come up with a definition of an incident in other periods of time. Does anyone have any questions?

CHAIRMAN CLAWSON: It doesn't look like it, Kathy.

MS. ROBERTSON-DeMERS: Okay. Now I'm going to go backwards here, and there is a table in the Evaluation Report, Table 6-1, which lists the availability of monitoring data for '72 through 2004.

As we put together this report, we noticed that that table didn't always marry up with the available bioassay data, and what happened was we found, say, uranium bioassay data for '72, '76 through '78, '83 through '85, '87 and '89, for the total population, we found plutonium data for '74, '78, '81 and '82, and we found a thorium sample for '83, which was not reflected in this table.

This raised some concerns, because

this table is based upon the HERS, the DoRMS and the OPTIX information from Pantex. So it indicated that it was incomplete. In addition, we really had some concerns on the way the tritium monitoring was reported in this table.

We were absolutely astounded that from '76 through '79, that the number of workers reported as being monitored for tritium really approached the number that were monitored for external dose, nearly equivalent. What we wondered was okay, are these zero doses being used to assume that there's tritium monitoring, and I think I brought this up before.

We found zero doses for tritium that did not have bioassay -- there was no bioassay record to indicate to us that the person was even monitored. So there's some concern over that.

The biggest problem here is that we're really questioning if this data from

Table 6-1 comes from HERS and DoRMS, which are the primary databases at Pantex, and I don't think Pantex has actually provided either NIOSH or us with the actual database. They've provided printouts from it.

MR. ROLFES: Kathy, what we do have, I've provided to the Work Group Members. It's basically a copy of DoRMS, with approximately half a million external dosimetry results, and I'll have to take a look back to see if the tritium doses were reported in there. I think they were, just because they were reporting whole body doses.

But they have the ability to sort the data however you like, and at that time when we requested this information, we had only requested the external dosimetry data, I think.

MS. ROBERTSON-DeMERS: Well, one of the -- so in other words, looking at that table, looking at the available bioassay data and it just appears that HERS and DoRMS are

incomplete or the data is being recorded as zero when people are not monitored, and Table 6-1 gives you kind of a sense of confidence, where there may not be.

MS. RAY: Can I make a comment? This is Sarah Ray, and I called in late. But all doses were reestimated in 1990. I don't know whether this has any bearing.

CHAIRMAN CLAWSON: Sarah, this is Brad. When you say "reestimated," they made -- what do you mean by that, I guess?

MS. RAY: I don't have their definition. All I know is it was printed on my dosimetry records, and those are my deceased husband, Michael Duarte. I cannot tell you their definition of what that was. But it does make me question, that the millions of records that have been looked at are not the original records, I would assume.

Again, there are a lot of assumptions by everyone. But I have a problem with that, since I do not know what was done.

I don't have access to that. But I think that is of importance. Are they looking at the original or are they looking at something that has been adjusted, if you will?

MS. ROBERTSON-DeMERS: I really think that you need to at least, especially from an internal standpoint, you know, take a zero millirem results as with a grain of salt. Now in some of the years, they would actually say for the radionuclide "NM," which means "not monitored." But in the earlier years, it appears that they would just record zero.

MR. ROLFES: Okay. It's not really something that's directly relevant in the dose reconstruction process. I alluded to our dose reconstruction process earlier. For an over-estimating type case, we would assign the highest recorded tritium dose for any year, which was 122 millirem, with the exception of the 1989 incident.

So we wouldn't be using a zero tritium dose to show that worker was not

exposed. We would assume the opposite, that the worker was exposed, if we had no information.

MS. RAY: If you had no information, then how can you be sure on any of this, because you're looking at, I would assume, an average. So there is a low, I would maybe guess of zero, and a high of whatever, you know. There's a lot of difference when you take averages. I don't know what statistical method you're using, because none of this has been described in any of your documents.

I must admit, I just got back from being out of town for two weeks, and have not had a chance to read everything. But you know, averaging is a totally different thing. So what statistical process are you using?

MR. ROLFES: We're actually not using any sort of statistical process for tritium exposures in an over-estimating type dose reconstruction. We're using the absolute

highest recorded doses for any year of operational history at a Pantex plant, with the exception of the 1989 incident.

So if an individual was not monitored for tritium, but is a Category 1 type worker, we would be assigning 122 millirem of exposure for each year, unless there's some kind of information that indicates that they weren't exposed at that level.

MS. RAY: When did you -- when was the highest dose recorded? I would think that would be important, because exposures in earlier years, because of the differences in practices and technology, and also the differences in the weapons, would have been much higher than anything today. I think everyone would have to agree with me on that. Things are just better today, but in recordkeeping.

So if that came from today, or any time after 1991, then it would not be

representative of early years.

MR. ROLFES: Okay. If you could just give me a second, and I'll pull that up out of our Site Profile. The highest maximum recorded individual tritium dose is on page 15 of 72 out of our Site Profile for Pantex. That value was recorded in 1981.

MS. RAY: And I would still stay that there could be and probably are, you know. That would be 30 years of -- 30 years prior to that it was started. You know, technology had advanced a great deal by 1991 or '81, because the QC was developed in '81, and we had the minicomputers and we had many things that were happening at that time.

So technology had advanced at that point. So recordkeeping probably had advanced. We've gone from having handwritten records, to being able to capture information on computers. Anyway, that's just the point I want to make, is technology and technological changes greatly affected all of

this.

MR. ROLFES: Sure. I understand your point, and that's something, you know, without -- you know, we understand there may be some shortcomings and differences in technology in the earlier years. You've got to keep in mind also that in the earlier years, there wasn't a lot of tritium on site.

Tritium didn't come on site until right around the time that sealed pits were coming into site. You wouldn't really be too concerned about a large tritium exposure in the earlier years, barring some incident. You know, most of the concern for tritium exposures would be during the disassembly time period, which really ramped up in the 70's, 80's and 90's.

That you can also see, you know, the tie to the increased monitoring and tritium exposures as well. You know, most exposure potential was from --

MS. RAY: There was no bioassay

recording or processing in the 70's and the 80's. It was ill-monitored; it was pee in the tub and put it in the cafeteria. It was done spasmodically at best. So it seems to me that what you're saying, you're contradicting yourself. But anyway, let's get on with something else. Don't let me keep interrupting.

MR. ROLFES: Well, thanks for your input, but we do have documentation that shows that the individuals with the highest potential for exposure were monitored, and starting back even in the early 1960's, although the monitoring method had a lower detection sensitivity, or excuse me, a higher detection -- a lower detection sensitivity. The limit of detection for the monitoring method back in the 1960's was a little bit higher than the current technologies that we have.

We do have indication, however, that the individuals with the highest

potential for exposure were being monitored. So we have --

MS. RAY: In most of the worker records that I have seen, and the workers I have helped, it was all of their information came back that, because I've helped them on their claims, it said "no exposure." So there is no bioassay record for you.

This was people who had direct hands-on experiences, and even at least one person who was involved in the tritium incident. It still comes back and says that in their dose reconstruction, that you know, there was no exposure, because this person did not, was not in a position to have that exposure.

So I think you have to take all of this with a grain of salt, because you weren't there. I was not there. We did not collect the information, and I think that we are imposing today's standards and our own experiences on something that someone else

did. I think that is a dangerous thing to be doing at this point. Anyway, but get on.

CHAIRMAN CLAWSON: Okay. Well actually, it's getting close to lunch time for us here. So --

MR. KATZ: Let me just propose the possibility, which you can knock out of the park if you don't like it. But since Bob's leaving at two and Mark's leaving at two, one possibility is we could just work through, instead of breaking for lunch at this point, and eat a late lunch.

MEMBER BEACH: Maybe we could take a short break.

MR. KATZ: We'll take a short break. I'll do whatever the group wants to do.

CHAIRMAN CLAWSON: Actually, I think it would be better. I didn't understand that we were losing these people this soon. Let's take a ten minute comfort break, and then let's, we'll just work through.

MR. KATZ: Is ten minutes fine? Is that okay with everyone? Anyone who would have health problems with missing lunch? Okay. So a ten minute break everyone on the phone. Thanks.

(Whereupon, the above-entitled matter went off the record at 12:09 p.m. and resumed at 12:21 p.m.)

MR. KATZ: This is the Pantex Work Group. We're just reconvening after a short break. Let me just check. Do we have any folks on the line still? Do we have Kathy?

MS. ROBERTSON-DeMERS: Yes.

MR. KATZ: Great.

CHAIRMAN CLAWSON: Okay.

MR. KATZ: Where are we?

CHAIRMAN CLAWSON: Did you want Kathy to complete here, Joe, or --

MR. FITZGERALD: Yes. I think we should at least finish up the outline of the document. Obviously, NIOSH is going to take some time and get comments back, but just to

outline it.

MR. KATZ: Go Kathy.

MS. ROBERTSON-DeMERS: I'm going to move on to air sampling data and I believe NIOSH mentioned that they had 40, roughly 4,300 pieces of air sampling data. What I did was I took a quick look at some of this air sampling data, and just to kind of give you a little bit of a heads up, some of the smear data is also intertwined in with this air sampling data.

Based upon the information, we have some sort of air monitoring data for 1959 through 1991, with the exception of 1963, 1988 and 1990. If you take a closer look at the data, the available air sampling is limited primarily to Building 1244.

So 1 through 6 and 8, to 1242 Vault, to the 1226 Vault, to the WR room, which I believe is the Weight Room, to RS, which I believe is Receiving and Shipping, and to the Mechanical Room.

Data for some of these years are available for Firing Site 5, for Building 1264, 1260, 1285, 1296, 15-2, 15-6, Area D, Zone 4, the water treatment area and the burning ground, although the coverage is not complete for those areas.

The data includes both alpha and beta results. A majority of this data that is referenced by NIOSH, the 4,300 samples, is designated as what NIOSH calls an ER cell error, okay. What that usually is associated with is the RAMS program, or general area air sampling within cells.

Some of this data is -- some of the air sampling are -- stations are actually not within the cells or bays, but are down the hall from the cells and bays. Our biggest concern with respect to representativeness of these samples is actually these cell air samples.

They are by no means within the breathing zone of the individual. They are

also not between the individual and the source-term. During our tour, we saw some of the units, and they are on the wall of the cell. The individual may be as far away as 20 feet. One thing that I should note is that in the newer facilities, the RadCon organization indicated that after the '89 incident, they implemented what was called "test exhaust," which would pull dust and tritium that was released from the worker, okay.

A very small amount of these 4,300 samples are lapel air samples, or even job-specific samples. I just kind of wanted to read to you a couple of audit findings in relation to the air sampling at Pantex. The Albuquerque Operations Office said in 1982, "The air circulation and ventilation in the cells is very poor, thereby decreasing the uniformity of contaminants in the air.

"The sensitivity of both the tritium and the alpha monitors would be greatly enhanced if additional sampling points

were located in the cell." Now Pantex's response to that finding was "Give us the money and we'll do it, but we don't have the money to add additional sampling points," at least at the time.

In the 1989 assessment by the Albuquerque Operations Office, they said that "The system of tritium and plutonium continuous air monitors, the RAMS, described elsewhere in this review, was designed to detect accidental releases of these nuclides, but does not monitor the breathing zone air, nor are filters counted after removal. As a result of this review, air filters are being routinely counted." So routine counting was the result of a 1989 audit.

In response to the relative representativeness of air sampling, NIOSH proposed an adjustment factor to the air sampling results, of ten. However, we're not sure what the justification for this particular factor is.

Now I need to back up a minute here. Although NIOSH proposes to use air sampling in only a couple of situations at Pantex, air sampling is being used to validate data that was collected in 1990, and therefore should be held to the same criteria as air sampling that is used to assign both.

In addition, we are trying to do a little bit of work, of additional work on this with the burning ground and the firing sites, or let me talk specifically about the burning grounds, which we visited during the tour. The individual giving the tour indicated to us that the air sampling was at the site boundary, probably some hundred yards away.

So representativeness of this air sampling data is actually a big issue, and when NIOSH talks about the 4,300 pieces of air sampling data, we're primarily talking about data that where we questioned the representativeness of the sample. We are not questioning the cell air sampling data. But

we are questioning the cell air data, because of the positioning of the air samples.

In addition, the data does not cover all areas in all buildings. So that's kind of where we stand on air sampling. I don't know if you have any questions or comments.

CHAIRMAN CLAWSON: Kathy, I had a question. This is Brad. I was just need a marker. How many of these are -- can you discern between breathing zone and just regular air samples?

MS. ROBERTSON-DeMERS: I would defer that question to Mark, but indication is that I would say over 90 percent of them are cell air.

MR. ROLFES: I'd agree with that, Kathy. The majority of what we have put together here was analyses of the cell areas primarily, and operational areas indoors, to basically use that information to give us, you know, a quick check, to make sure that -- what

we didn't want to find would be a situation where the bioassay data resulted in lower intakes than what the air monitoring data indicated.

So what we've done is basically compared intakes based upon the air monitoring data to the dose reconstruction approach that we used in our Site Profile. It turns out --

MS. RAY: Can I ask something? What cells were considered, because during the period of our SEC, '51 to '91, the 1244 cells were the only ones that were in operation, and that was where the nuclear was mated with the HE. Mechanical was done primarily in 1226 until 1264 was built.

But the '44 cells are built so differently. No test exhaust. The air handling unit does everything. The corridors where the radiation monitoring systems were located and they were in, you know, at eye level, which I'm sure all of you all saw when you did the tours.

But the other cells are quite different in design, as compared to the 1244 cell. So if information from later-built cells or new technology, again I say, that was involved in the creation and building of the newer cells, would be quite different than what you would get from 44.

MR. ROLFES: Okay. Thanks, Ms. Ray. This is Mark Rolfes. What we have looked at was 1244, Cells 1 through 6, and Cell 8. Our analysis just to look at the data, we looked at 4,500 data points roughly, and the data that we looked at was from 1974 through 1987 at the time.

It turns out there's some additional data that we didn't have at the time we completed this analysis back in 2008. So we've got contemporary data, data from the time period when the actual operations were taking place in 1244.

CHAIRMAN CLAWSON: So you'd say probably ten percent of them were breathing

zones?

MR. ROLFES: In fact, I would probably guess that less of them were breathing zones. The majority of these are gross alpha area air concentrations that we developed. You really didn't see a lot of breathing zone monitoring at Pantex, just because there typically wasn't a lot of respirable material in the air. If you take a look at, you know, some of the more recent breathing zone sampling, lapel sampling data that we've got in claim files, you'll see still --

I mean I certainly agree. Things are different today than they used to be, but still I'm not seeing anything. Their most significant concerns really are background radon concentrations within the work areas. That's really what they're routinely detecting, and not detecting too much of occupational-related radioactivity in the air.

MS. ROBERTSON-DeMERS: Brad, I

would refer you to a table in the ER that lists the SRDB numbers for air sampling, by year, and also surveillance data, and I would say you have maybe a handful of lapel air samples.

CHAIRMAN CLAWSON: Okay, thank you, Kathy. Go ahead and continue.

MS. ROBERTSON-DeMERS: Okay. One of the things that, you know, I tried to get my arms around was the exposure pathway, and I think earlier, I referred you to Table 2, where there bioassay gaps in the population.

I would encourage you to take a look at the years that a radionuclide was present and handled at the facility, versus the years where there was no bioassay data, and you will see that there are gaps in the bioassay data.

Just real quick in this area, obviously there was an improvement in the radiological control program through time. The 1989 depleted uranium incident and the

tritium incident raised the level of concern regarding the internal dosimetry program.

One thing I want to bring up to you is that during our tour, Scott Wilson, who is a part of the Radiation Safety Department, handed out a table, and this table listed the various programs and the radiological concerns associated with those programs.

So we've been talking a lot about the incident in 1989, which resulted in the samples in 1990. However, that was not the only program with issues. With respect to uranium oxidation, they had identified eight programs. They also identified programs where there were issues associated with tritium and thorium.

We're going to detail, just a little bit more in a future report, after it goes through classification review. Another thing that you're going to see in our future report is we had originally raised an issue

with incidents related to -- well, I think I can say this, to Broken Arrows, and we will have a further discussion on that and the potential for exposure in those situations.

We've heard a lot about the increase in disassembly towards the latter part of the SEC period, and I'm going to make a supposition here, and it is if you can refer back to page 14 and 15 of our report, you'll see some figures. If you look at Figure 1 and even Figure 2, which is Category 1 workers, and Figure 3, you'll notice that there was an increase in monitoring right around the mid-60's.

My supposition is that there was increased disassembly operations going on during that period of time. In addition to that, there is -- there were both destructive and non-destructive testing of units within the stockpile, or surveillance units.

There were modifications to units. There were retrofits, and there were also

joint test assembly testing, post-mortem evaluation of JTA, and you have to kind of take that also into consideration.

Also, another way to think about this is while the number of disassemblies may be very high now, compared to back then, there are new rules that have been implemented that restrict, within a particular cell, how much activity can go on in that cell. Historically, that was not the case.

So within a given cell or bay, if you compare that through time, historically the source-term would be greater. So I would kind of offer that up as food for thought.

MR. ROLFES: Maybe you could detail a little bit more on what source-term you're referring to. Are you referring to uranium, tritium, you know, everything in general? Plutonium?

MS. ROBERTSON-DeMERS: I would be referring to any source-term which causes either internal or external exposure.

MR. ROLFES: So across the board, the source-term was larger during the earlier years?

MS. ROBERTSON-DeMERS: Within a given cell or bay. Understand that.

MR. ROLFES: Okay, I got you.

MS. RAY: And this was because the limits were changed drastically in the 90's. Prior to say like 1991 or even 1990, multiple units and even different programs could be in a bay or cell, waiting to be worked on, whatever the process was. There could be eight, nine, ten full-up weapons in an area, waiting to be disassembled. That is not the case now. The limits are quite different.

MR. ROLFES: Thank you.

MS. ROBERTSON-DeMERS: I don't think I will browbeat the comprehensiveness of the radiation safety program. But I would like to bring up one item, and that is you do have -- you've taken a position as NIOSH, and you do have conflicting audits.

But in addition to those conflicting audits, you have worker input that's telling you "I walked out of the bay blowing black powder out of my nose. I wasn't doing egress monitoring," et cetera.

And by the way, our interviews are in review, and will be released to the Working Group as soon as we can, so you can see the full extent of the comments. But I think that there needs to be some resolution of all these discrepant comments coming in, your position versus all the audit findings, versus what the workers are telling you with respect to contamination control, air sampling and implementation of the radiation safety program.

You can't have one technician even for a short period of time, I think he indicated a couple of years where he was the only technician in the field. He is not physically able to control everything that is going on in the field, to do his routines, to

check his instruments, to cover jobs, to count air samples and smears, et cetera.

And even with 3, which was stated also by this RadCon person, it's still a challenge. Pantex is a huge plant, and there's a lot of operations to cover. So I think there needs to be some resolution between all of these different aspects.

MR. ROLFES: Yes. The concern about, you know, black powder encountered during disassemblies, we actually did look into this, and I have a quick question for you. Is all black powder radioactive?

MS. ROBERTSON-DeMERS: You know, that was my question. I have my suspicion there is another possibility, which I can't discuss on the phone.

MR. ROLFES: Okay. Well, in turns out there's some analyses from the 1989 incident and other incidents, that showed that a lot of the contaminants, there's other materials and other metals that oxidize, that

aren't radioactive. These are some of the responses.

You know, in some of these instances, there have been occurrences where there's grease, uranium, other heavy metals that have oxidized. So yes, the workers do have an accurate depiction of what occurred. However, not all of the materials to which they were exposed necessarily were radioactive. So there's, you know, you've got to make sure that you look at, you know, things in context and look at the analyses that are done.

I'm not saying that analyses are always done, but you know, we've got to make sure that we look at all sources of information, including worker input, as well as the scientific information and analyses of the materials to which the worker could have been exposed.

Now we only limit, under this program, our analyses to the radioisotopes to

which the workers were exposed, not necessarily other chemical agents.

MS. ROBERTSON-DeMERS: Well, I have two follow-up comments. First, it would be very helpful if you would give us the SRDB number for that analysis.

MR. ROLFES: Sure.

MS. ROBERTSON-DeMERS: And second, you know, with respect to worker comments, it's not me you need to be communicating with, but to the workers.

MR. ROLFES: Right. This is actually something that we've heard several times. I've been going down to the site for probably about five or six years, and I know that we've spoken with the Metal Trades Council employees on a number of events about this.

They're actually, you know, they were the reason we had revised the Site Profile back in 2007, I believe or 2008. I have to take a look back at the date. But it

was actually their input that led to some changes in our Site Profile. So their input wasn't ignored, and was actually used to update our Site Profile.

MS. ROBERTSON-DeMERS: I have one more thing that we were asked to look into. I don't have very much information on it. When we conducted our original Site Profile interviews, there was mention that a previous RadCon manager had destroyed field records.

And unfortunately, this interviewee did not review his interview. So you'll have to take that with a grain of salt. He did mean the former RadCon manager, and unfortunately this RadCon manager is deceased. So we could not go to him and ask him directly what was going on.

There was another indication that an individual, I guess this was from the Worker Outreach meeting of January 29th, an individual indicated a former Pantex worker stood and watched as the Safety Division

manager destroyed accident reports.

I think the bottom line here is that we need to investigate this further. I've pretty much given you what we, the information that we have to this point.

MR. ROLFES: Yes. I've heard many of these same things as well, and unfortunately, I've looked into this, but haven't found any way to determine whether or not, you know, this could be corroborated. You know, I'm not saying that records weren't destroyed, because we know many were. You know, and we may not have found all of the records that were created in the first place.

So yes, without additional details, the individuals that had provided details to us previously didn't really provide us enough information that would allow us to tie it to a specific report or, you know, we'd be looking for a needle in a haystack without any kind of details as to what was destroyed, and whether it was something that was needed

for dose reconstruction.

MS. ROBERTSON-DeMERS: Okay. Just one more thing, and then I'm going to turn it over to Ron. There are several attachments to this report. Attachment 1 gives you the documents referenced for bioassay data. I talked about the figures up front. Attachment 2 provides the data which went into those figures.

Attachment 3, as I previously mentioned, are the radiological incidents which we compiled from various sources, and I just wanted to let you know that, and I will let Ron have the floor.

DR. BUCHANAN: Okay, I'm here. This is Ron Buchanan with SC&A, and I believe that I'm going to cover the external dosimetry data, accuracy and completeness, and I assume, since Kathy's been referring to the report, that you have our report that was recently issued.

The external is not quite as

involved as Kathy's internal, and so I'll cover that here on page 36 of the report you received. First of all, I'd like to rephrase or inform everybody of how the records, I found the records were kept, and then I'll talk a little bit about whether I found accuracy problems or adequacy problems.

So on page 36, you see there we have, refer to four forms. At Pantex, fortunately the external dose has been kept pretty simple on the record side. In Exhibit A there, I'll just cover the form and go into a little more detail. In 1960 to 1976, about mid of 1976, they used a handwritten form or a stamped form. In '76 through '89, they used the first computer-generated record. Then another type in '98, and then a fourth type in 1999 to present.

So they had, the first one was handwritten and the other three were computer forms. Now I cannot, I don't believe that they ever propagated the data forward. In

other words, the records that the dose reconstructor used are either handwritten, as shown in A, B as computer-generated in B, C and D, and these are independent forms.

Except that the B, 1976 to 1989, went back and brought all of the handwritten form information data forward to those forms. So B actually contains A and B information, and of course, that was the only one I could really check for whether it was accurate or not, because the others were stand-alone computer forms, and there was no consolidated computer system that put all four of those forms in together.

We see that in Exhibit A there, it shows that handwritten with dashes, positive numbers or zeros. B was computer-generated with dashes, zeros and positive numbers and the same way with C and D. So of course, looking into the accuracy of data is somewhat of a long process, because to verify every one of them would be prohibitive.

So what I wanted to do was go and look at some cases, and just see if there appeared to be a problem. So on the next page there, I outlined the fact that I took, had 24 cases, which we'll talk about in more detail later.

But I took three of those cases that contained a number of years of handwritten data, from 1960 to 1976. I looked up four, and the fourth one didn't contain a lot of data, so I concentrated on the three that did. Of those three cases, I compared about 2,000 positive dose values, blanks, dashes and zeroes, to see if those carried forward correctly into the computerized system as shown in B there, the 1976 to 1989, or how accurate the handwritten one or readable they were.

In this case, the dose reconstructor receives, I went back and looked at some of the claims, the dose reconstructor receives all of these forms, if they're

applicable to that employee. So anything that is, that's on the handwritten form and carried to the computer, first computer form, is available in front of him there to look at and compare them.

But I went and compared. The positive entries I compared for these three claims had quite a few entries in them, and I did not find any errors in carrying them forward. In fact, when they transposed it from the handwritten form to the computer form, they actually caught a couple of mistakes in math and numbers, and corrected those when they put them in the computer, first computer database.

In addition to this, the vendor came back and did a few corrections, and those were correctly entered and carried forward into the computer database. So I did not find any problems with this very limited sampling of positive dose entries from these two databases, and like I say, C and D, I couldn't

verify the accuracy because these were the initial database entries, and so there was no handwritten records to compare them with.

Now the other aspects is blanks, dashes and zeroes, and you might say well, why is that important? Well, it is when you start figuring missed dose and/or decide whether to assign coworker dose, because if you have a form and it has blanks in it, that means a different thing to a dose reconstructor than if you have a form that has zeroes or dashes in it.

So I wanted to compare the dose entries as well, and on page 30, I guess it would probably be about 38 years, it talks about the blank entries. We find that generally, they were accurately transposed from the handwritten to the computer base. We did find that occasionally a zero would be entered when there was a blank or a dash in the original database.

We found that sometimes, the

quarterly and monthly would have a zero instead of a blank, and we found that the internal risk and extremity entries, which sometimes have zeroes or most of the time would have zeroes in the computer base, whereas the original handwritten would not have zeroes in them; maybe either a blank or maybe a dash.

And I found that in some of the originals, the techs there -- and I should make a clarification, is that some of the original did not always have the extremity column in them. They didn't always have the heading with extremities labeled on them. And yet in the computer database, they would list it as zero or a dash under extremities. So that's a minor thing, but it did occur.

So you can compare them by looking at the different columns, as I've outlined there. But in general, we found that the positive values that been entered correctly; however, the zeroes sometimes were entered

when there was only blanks or dashes in the original, and that's important, because what it essentially would lead to would be an over-assigning of missed dose, in a regular dose reconstruction situation.

But it also could lead, if the person wasn't monitored and should have been assigned coworker dose, they could have been -- the dose reconstructor could look at it and think that the was monitored and got zero and assigned missed instead of coworker.

However, the original data sheets supplied, the handwritten ones, so the dose reconstructor can go back and see that if a person was monitored or wasn't monitored during a certain period. However, and so because there is no data it is there.

Now the exception to the accuracy, there wasn't a problem going from the handwritten to the database or any of the databases that I can see. I looked over all 24 cases. I couldn't do every entry in every

case, especially when I found that there was a fairly accurate, but it did look consistent.

So I did find, though, that in Exhibit E there, it shows that in September of '74, and tracking this to ground, the best I can find is that for some reason, Pantex had a special neutron monitoring program in September of 1974, and they sent the badges to Rocky Flats plant for development and reading.

Then they got them back, and they had a sheet, a data sheet in the research database that I pulled out there, which I give reference to in this paper, and it appears that 46 workers were specially monitored for neutrons this one period. Rocky Flats sent the information back.

So I tried to find if this was entered into the worker's files, and I found that in one employee, I looked at the ones we had the claims on, of course. That's the only one I could review, and I looked at the information, to see if it was in the

employee's database and available for dose reconstruction.

I found one that there was, the 50 millirem was recorded and used in dose reconstruction. One had 40 entered instead of the 20 as reported by Rocky Flats. I don't know if they had another 20 from their reading or what, but the total was 40. And I found that five employees that had filed claims that had zero, 10, 20, 30 and 80 millirems of neutron dose, it did not reflect in their file sheets, in their files.

So that dose would not be assigned. Of course, the zero wasn't important. The 10 and 20 wouldn't be, because that would be around half the limits of detection, and they'd be assigned missed dose, which would be the same. Now the 80 would be the only one that would be assigned slightly lower dose, using one-half the lower limits of detection.

So I looked elsewhere for this,

any information on this, and if there's any other instance of this, and did not locate it. This seemed to be an isolated use of it. So that brought us to the fact that the accuracy looked, other than this special neutron monitoring, the accuracy looked reasonable on this database.

But then that brings us to complete this, was there adequate data? Was it all there? Well, of course, there's no way we can really know whether it's all there or not, unless they was monitored 100 percent of the time every year. So, and we know that's not true at most sites.

So what I did was look at to see if the ones that we expected to be monitored; in other words, people that would have jobs with a potential irradiation, external doses, were they monitored, what percent of the time and in what years?

So I took 24 cases and looked at them, and they had titles which included

things such as operators, inspectors, assemblers and stuff, and expect they probably should have been monitored. Now if they -- some of them worked different periods, and some of them would work like a clerk or auto garage. I would remove that period, because I wouldn't expect them to be monitored during that period.

So I looked at the time that they had job titles, that indicate they should have been monitored for external radiation. I did it two ways. I looked at the individual cases and what percent each worker was monitored, as shown in Figure 4 there, in the individual case results of the 24 workers, and we see we go from A to X there, 24 workers.

As you can see, the percent of monitoring increased as you go to the right somewhat. So that means in later years, that was their hire years, in the order that they was hired, from '52 to '79.

We see that the D and E there,

case were production operators. You know, they worked a very short time, but there was no dosimetry records and I can't explain why. They just didn't have any. That was probably the two, that there was a question on completeness there.

Now to really get a better handle on that, I wanted look at eclectic monitoring. So I looked at how many years worked in each year, from '52 to '04, and how many were monitored during those years. So more on eclectic basis, and that's shown in Figure 5.

This really tells us the most information. If you go to the left there, you see the red bars indicate that number of years worked, and the blue bars, the number of years monitored collectively for that year. You can see, and this goes, again in the hire date was '52 to '79. So we had a pretty good span, especially in the early years, to determine the monitoring frequency.

You can see there that the

monitoring, there was no data up to about 1960, although there was years worked, and then you see '60 to about '79, there was an increase in monitoring, and it really wasn't until '79 or '80 that we got fairly good monitoring going. In other words, the blue bars about cover up the red bars, and so that would indicate a large percent of monitoring.

So that's essentially what we did for the completeness of this database. Now there was three. Whenever I do these, I'd like to look at some that I wouldn't expect that declined to be monitored, just to show that we did cover both bases.

So we looked, I looked at three security guards, and I'm not saying they shouldn't have been monitored. I'm saying generally, they weren't back in those periods, and sure enough, the three security guards that were hired during the earlier years did not have any external data in their records. This shows that they weren't monitored.

Now if you look at the dose reconstruction on the guards, you'll see that they were assigned environmental doses, and that's generally for people that weren't monitored.

MR. KATZ: Ron, are you still there? Kathy, are you still there?

MS. ROBERTSON-DeMERS: Yes, I'm here.

MR. KATZ: Okay. I think Ron probably doesn't know he cut himself off. Do you have a number for him, Kathy?

MS. ROBERTSON-DeMERS: Yes.

MR. KATZ: Thanks. I've gone on at length sometimes, not knowing I was cut off.

CHAIRMAN CLAWSON: I think we all have.

MS. ROBERTSON-DeMERS: He'll be back momentarily.

MR. KATZ: Thanks, Kathy.

DR. BUCHANAN: Okay. I think I

lost connection. Am I back on?

MR. KATZ: You're back on. Thanks, Ron.

DR. BUCHANAN: Kathy says I dropped out on the security guards. Okay, so I'll start there.

MR. KATZ: Yes, thanks.

MR. ROLFES: Ron? This is Mark Rolfes. Before you carry on, I wanted to ask a quick clarification about the cases D and E.

You had mentioned production operator as the job titles for those two cases, and it looks like they were, they started working in the earlier time period.

DR. BUCHANAN: Yes.

MR. ROLFES: Did you see any details, whether or not they might have been involved in production of high explosive components rather than weapon components? I mean a lot of the early work in the early 50's was related to high explosive materials production.

MS. RAY: Those job titles were engineering technicians. That was generally their job titles to ones that worked with the HE. So they were never called assembler operators.

MR. ROLFES: Right. That's what I'm asking. So would a production operator from the 1950's be someone who worked with, you know, full weapon builds assembly, or would they be related to high explosives production?

MS. RAY: High explosive production operators would have been engineering technicians.

MR. ROLFES: Okay, okay.

MS. RAY: They would never have been called assembler operators.

MR. ROLFES: No. This is production operator.

MS. RAY: And I think that that is a combination of the current term "production technician," plus operator and assemblers. I

have copies of all of the job descriptions, and they have always -- the people who directly handled the HE, the high explosives, were always called engineering technicians.

MR. ROLFES: Okay. All right, thank you. Ron, does that -- was there any other indications that the individuals had worked with radioactive material, or were there statements that they didn't in their interviews, for example?

DR. BUCHANAN: I don't know. I'd have to go back. It's been quite a while since I did that. So I'd have to go back.

MR. ROLFES: Okay.

DR. BUCHANAN: I can send you those two case numbers.

MR. ROLFES: I was going to say maybe, since we're talking about 24 cases, maybe if you could identify all 24 for us as well.

DR. BUCHANAN: Okay, yes. No problem. I can send that to you, and I'd have

to go back and look at D and E, to see -- I remember the job titles "production operator." But I didn't go into any details further on what they might have been doing at that time.

MS. RAY: Can I ask one other question? My observation, after reviewing two or three handwritten dose records, was that often, names were missing, as were badge numbers. Did the 24 cases that you looked at on the handwritten documentation, did they all contain the person's name and badge number?

DR. BUCHANAN: Let's see. They all contained --

MS. RAY: It's probably a small thing.

DR. BUCHANAN: Yes. I did see in the scripts the names. I'd have to check the badge numbers. But they all had names on the handwritten ones that I looked at.

MS. RAY: Okay, because I have seen them where they basically have nothing.

DR. BUCHANAN: Yes, I didn't run -

- in the sampling I did, I didn't run into any that did not have names on them. Like I said, I didn't particularly look for badge numbers, but they always had names.

MS. RAY: Okay.

DR. BUCHANAN: Okay. So that brings us to the security guards, and like I said, I guess that's where it dropped out, was that I'd like to look and see for some categories that I wouldn't have expected at the time to perhaps been badged. However, I'm not saying they shouldn't have been badged by our present standard. I'm saying that sometimes they weren't in the past, and look and see if that is true.

So I looked at three files claims for security guards, and did not find any external monitoring data for the three security guards that I looked at. They were assigned environmental dose, and this perhaps would not be appropriate if they stationed inside with the workers, as opposed to being

outside at a guard gate or something.

So that was consistent with the fact that they weren't monitored back in those periods, and some of these started in the early 50's.

MR. ROLFES: Ron, this is Mark again. In your report here, it says "NIOSH assigned environmental for coworker doses to these security guards in the dose reconstruction final report." So I wanted to clarify that, you know, if we have indication that an individual was around radioactive materials routinely, then we would probably assign the coworker doses, if there was some uncertainty.

MS. RAY: Do you have any way of knowing whether these three security guards accompanied, or some of the ones who accompanied the shipments, the receipts? I heard many of the older guards talking about back in the time when materials were flown, standing around an air shipment at the air

base in early years?

Obviously, they would have to accompany anything that was received or sent out from the plant.

MR. ROLFES: Mrs. Ray, this is Mark Rolfes. Regarding those exposure incidents and concerns, those are actually offsite of the Pantex plant. So unfortunately, those are not included in our dose reconstructions.

MS. RAY: What about, you know, the guards when they -- obviously, you know, there were time receipts. Guards are always present when something is coming in or going out. So was there -- did you consider that fact, the ones who would have been stationed with the items that were going out or being received at a loading dock?

MR. ROLFES: Yes, and that's something we've heard as well, and that is something that we do consider during the dose reconstruction process.

MS. RAY: And what consideration would you give the ones, since it is an offsite type of situation? Do you assign anything on that, because even though it was offsite, they still could have the potential of being exposed to radioactive materials. Shouldn't that have been considered?

MR. ROLFES: I understand.

MS. RAY: It was part of their job duties as security guards at Pantex.

MR. ROLFES: I understand. However, our legal department has basically advised us that since that is not a covered facility, that that dose cannot be included, even though it was related to their duties.

MR. HINNEFELD: This is Stu Hinnefeld. I'm the director of the office, and that is the -- it's an artifact of the construction of law. The law says we are to reconstruct the doses received at the sites, the covered facilities.

MS. RAY: Okay, thank you.

CHAIRMAN CLAWSON: But Sarah on your comment, and this came out in our tour, whenever an safe, secure transport came in, the guards were responsible to get up and check the seals on each one of these containers. This was one of the questions that they had brought up. So it's something that we have been looking into.

MS. RAY: Okay, thank you, because I think it is important.

CHAIRMAN CLAWSON: All right.

DR. BUCHANAN: Okay.

MR. KATZ: Okay, Ron.

DR. BUCHANAN: So just in summary, we've seen that the limited sampling here showed that the -- there was no external monitoring data available in '52 to '59. '60 to '62, there's insufficient external monitoring.

Only 16 percent of the year's work was monitored. '63 to '78, there was increased monitoring, with an average of 72

percent of the year's work monitored, and '79 to 2004, a substantial increase, consistent monitoring of around 90 percent of the year's work were monitored.

This was what we found for external, in the external dose records. Any questions?

CHAIRMAN CLAWSON: It doesn't look like it, this time Ron.

DR. BUCHANAN: Okay.

MR. FITZGERALD: Ron, can you stick in for a little bit longer?

DR. BUCHANAN: Okay, yes.

MR. FITZGERALD: We might get into the neutron topic, and I know you were involved in that. So that would be helpful.

DR. BUCHANAN: Okay.

MR. FITZGERALD: Okay. Again, given the clearance issues, we didn't get that until just lately. So we recognize that that will be something you'll respond to later on. But it probably be useful just to outline

what's in there. Going back to the agenda.

CHAIRMAN CLAWSON: Where are we at?

MR. FITZGERALD: I think we're on number three, actually going back to, and we're actually making pretty good headway. I think I skipped ones to move things along.

But you know, we're on the neutron dose issue, and Ron was involved with the piece we sent you on December 27th, which kind of responded to the issue of supplanting the neutron/proton ratio approach that we had some issues with. I think you actually some issues with too, and you proposed the MCNP-based coworker approach, which is something that was first proposed at Mound.

So a lot of what Ron's piece was in December was simply to comment on where we stood basically, now with this new proposal on the table essentially. You know, I have to confess. I don't think we've seen a response on that, but I may be wrong.

MR. ROLFES: Correct. Actually, if you recall, we had the Germantown trip visit scheduled, and that was when the looming government shutdown basically forced us to cancel our flights at the time.

So we weren't be to get our project external dosimetry technical lead up to D.C. to review some of the records that we felt might be responsive to some of the issues SC&A had identified.

MR. FITZGERALD: Okay.

MR. ROLFES: We have had the opportunity to get his eyes on some of the records. However, not a complete set of records yet. So --

MR. FITZGERALD: I just got an email from him, by the way, saying that my notes for the day had just been cleared. So that helps a lot, but he also had a long queue with everything else that we're looking at. So apparently there's a lot there right now.

MR. ROLFES: Okay, from --

MR. FITZGERALD: From ORAU, NIOSH and from SC&A.

MR. ROLFES: Oh, you got a note.

MR. FITZGERALD: Yes. He just emailed me back, because I was pressing him for notes for this meeting, and he just cleared them today, almost.

MR. ROLFES: Okay. Almost. Okay. But yes anyway, we wanted to make sure before we issued our response, that you know, he's had the opportunity to see, you know, some of the earlier reports that he hadn't previously seen back in, you know, early on in the time period when the TBD was developed.

But let's see. I believe we had hoped to get something completed by right around this time period.

We're working on finalizing a response, and I think we're probably going to use the next trip to Germantown as another opportunity to review some of the remaining documents that we didn't get through, and

hopefully issue a more final response to you on, you know, to address the concerns identified by SC&A.

MR. FITZGERALD: And these, as I recall, and Ron can correct me, these were almost the same kinds of issues that we raised at Mound, when the MCNP-based coworker model was raised, and we just wanted to understand how those were being addressed in the Pantex context.

MR. ROLFES: Sure.

MR. FITZGERALD: The other issue, and I don't think we can get into it here, but it's certainly a good Germantown issue.

MR. KATZ: Well, before we do this, can I just get a sense of -- so if that meeting is in June that we're going -- one thing at a time. That meeting is in June that we're going to, sort of data capture type discussion meeting.

But so then so then do you just have a sense as to how much following the

meeting to actually prepare a response and then get DOE to clear it? What framework are we talking about? Is that a couple of months?

MR. ROLFES: A month, six weeks maybe, is what I guess.

MEMBER BEACH: Mid-August.

MR. KATZ: Yes. It sounds like we're talking about the August time frame.

MS. ROBERTSON-DeMERS: Ted? I've had my interviews in for eight weeks, and they're still not cleared.

MR. KATZ: Right, yes. I imagine, but maybe it's not true, different kinds of documents have sort of different time frames with them for review by DOE, but maybe not. Okay, I'm sorry to interrupt.

MR. FITZGERALD: To be fair, we're pushing certain things faster, and I'm sure things are lagging.

MR. KATZ: Yes.

MR. FITZGERALD: So we may be partly responsible for that. No. I was going

to say one thing that it would be helpful for you to address, and it's something that we kind of identified in Germantown, would be to look at the MCNP, and I'll say this carefully, and see where the MCNP model would be bounding for the various systems that historically were handled at Pantex.

That was the other question, and Kathy, maybe you can more artfully phrase it, because I think that's kind of what we felt would have been the add-on, based on additional thinking on the neutron. Is that about the way you can capture that?

MS. ROBERTSON-DeMERS: Well, in the adjustment factor, there are three elements, one of which is a correction factor derived with the MCNP model, that tries to characterize the percentage of the source-term that's less than 500 keV, and the other two, and Ron speak up if I've got this wrong, one is fading and one is angular-dependent.

MR. ROLFES: That's correct,

Kathy.

MS. ROBERTSON-DeMERS: The one we have the most concern with and the one that's the most sensitive is the correction factor for MCNP, and I don't know that we can say too much about that. That the particular factor that gets into some sensitive documentation.

DR. BUCHANAN: Yes. This is Ron Buchanan. That's correct, Kathy. The fading and the angular dependency is probably not a classified issue. It's an issue, but not classified, and it's very similar to Mound, except that here, we have a question of PA and radiation.

But however, the energy spectrum is for the neutrons below half MeV. So that might be where we run into classified information that would affect the correction factor.

MS. ROBERTSON-DeMERS: Now one item on angular dependence that, you know, we would like to see some input on is the fact

that like Sarah said, there can be multiple units in a cell or bay at one point, and how are you going to deal with that.

MR. FITZGERALD: And what I would propose, because again, we go into these six-month cycles, I did get some of issue-specific papers cleared, according to the email, and what we'll probably do is share those with you by memo to the Work Group, and just hit some of these specific points.

So if you're in the midst of thinking about neutrons, you'll get the benefit of some of this additional perspective, as long as it's clear, of course, that maybe you can incorporate. If not, if too much of it is redacted, then we'll save it for Germantown and have that discussion then.

But I'd rather deal with that in real time, if we can get that information to you on this neutron business, and the other issues as well. Well, that's -- I guess that's about it on that one.

MEMBER BEACH: I have a question on the data adequacy and completeness. Mark, when do you think you'll have that paper ready? I know you just got this, so --

MR. ROLFES: Well, that's --

MR. HINNEFELD: That's a little complex for us to say. It will involve work by our contractor, who also works on everything else, you know, that the Board's working on.

MEMBER BEACH: Oh right, that priority thing.

MR. HINNEFELD: So it's going to be a matter of prioritizing what's in front of us, recognizing that Pantex has been going on a long time, and it's high on the list. But it's just too complex to say here, and to give an estimate today.

MEMBER BEACH: Okay.

MEMBER SCHOFIELD: Do we know which Kivas had M-1 within Kiva itself or out in the hallway?

MR. ROLFES: Talking about reactor containment buildings. That's a Kiva?

MEMBER SCHOFIELD: Oh, no, no. I'm sorry. I'm getting the wrong state, you know, the cells.

MR. ROLFES: In the cells, Building 1244, Cells 1 through 6 and 8 had air monitors in them.

MS. RAY: They had air monitors in the corridor, not directly in the round room.

MR. ROLFES: They had sampler heads within the cell. They had --

MS. RAY: They were sniffed in at eye level.

MR. ROLFES: Correct, so that would be a sampling head. They also had one in cubicle A, B --

MS. RAY: On the walls, and the work was primarily done in the middle because of the positioning --

MR. ROLFES: Correct.

MS. RAY: Of other things that

were used to process air, to process vacuum, hoisting and rigging, that type of thing.

MR. ROLFES: Right, right, and then also in the equipment room. So there were basically in each cell the cubicles and the equipment rooms.

MS. RAY: The staging area.

MR. ROLFES: Yes.

MR. FITZGERALD: Anything more on neutron? I mean I think that pretty much lays it out where it is right now. That's been, I think, documented pretty well. Ron, thank you for helping out on that.

DR. BUCHANAN: Yes, okay.

MR. FITZGERALD: The next thing on the list is the external dosimetry issues, and that's been a source of confusion, but to sort of try to go back, and originally, it must have been two Work Group meetings ago, maybe it's one Work Group meeting ago.

But anyway, what we had was discussions on a number of the external

dosimetry issues, and these were a number of questions about adjustment factors, if you recall, and a number of things like that. We had Hans Behling come on the speaker box, if you recall that conversation. This is going back a ways.

But at the end of that conversation, I think the Work Group was leaning towards making that a Site Profile issue. I mean all, there's like three or four external dosimetry issues. Hans agreed that, you know, this was more on the realm of picking the right adjustment factors, but not certainly negating the ability to dose reconstruct, if you can call it that.

Where the, and I had to -- just went back to the transcripts from the last Work Group meeting, because it's been a while, but where the Work Group was coming out on that was there were some pretty important, legitimate adjustment factor issues and other questions that dealt with the external

dosimetry.

But clearly, I think, the consensus was it was tilting towards a Site Profile discussion. Rather than take up room and, you know, in this case, to have NIOSH go back and look at the findings that were identified, and see if --

And this gets back to some of the things we've been doing with GDPs on Site Profile, to see what would make sense to put into the queue for changes in the Site Profile for the external dosimetry TBD.

Not to put too much into this, but that's kind of where that came from. I just keep seeing references saying, you know, not sort of recognizing that was where this thing was left. So this is actually something the Work Group, based on the last Work Group discussion deliberation, felt was more of a Site Profile issue, but still, you know, didn't want to lose it.

It was important enough that the

request was for NIOSH to go back and consider what changes could be put in the pipeline. Certainly not in the same context of SEC time lines, but just make sure these were captured. That was kind of where it was left.

I know it's on our, it's on the list. I know it keeps showing up and I know you responded to it, but that's kind of the essence of it, and I'd invite you to go back and look at the transcript. I mean that's kind of where it came out.

MR. HINNEFELD: What's the issue again, sorry?

MR. FITZGERALD: External dosimetry issues. There's three or four findings that revolve, and I can tell you the numbers. These are Findings 6, 11, 12 and 13, and we did have a good discussion on those. But after the give and take was done, and Hans is a pretty, you know, he doesn't give very often.

When he said that, you know, he

was pretty satisfied this was more of a, you know, picking the right adjustment factor or coming up with the right variance, that he thought it was more of a Site Profile question.

That's when the Work Group came back and said well why don't, you know, these are still pretty important. We don't want incorrect adjustment factors and dose reconstructions going on. Can you go back and at least see what could be done readily?

For the ones that take awhile, like with all Site Profiles, they get put in the queue and when the Site Profiles obviously revise the -- you know, a patch up of those. But for some of these actual numerical factors, you could -- and there was an acknowledgment at the table, yes, these were not right or incorrect. I think that was the only follow-up, and I notice that we keep going back to it. That was it.

MR. HINNEFELD: Okay, and that was

the transcript of the last meeting of this Work Group or do you remember when it was?

MR. FITZGERALD: Yes. It was the last transcript, but that's a year ago.

MR. HINNEFELD: Okay.

MR. ROLFES: I was going to say, I recall having a discussion about external dosimetry, and I remember one of the not findings, but one of our responsibilities following that meeting was to provide a reference. We had quoted a reference for an uncertainty in the measured gamma doses, and we provided that reference since --

MR. FITZGERALD: Yes, it was more than that. Actually, like I said, I don't want to take too much time up here. But it's helpful to go back and look at the transcript, where we're having this exchange with Hans. Then the Work Group weighs in and I think there's this agreement, which is hard to reach.

But this was certainly looking

more like a Site Profile question, and maybe the way to dispatch it was to do that. That's kind of where I'm carrying it here. So it might be helpful just to pin that down and take it from there.

I mean I think it could also go into the matrix and update the matrix, but I wanted to at least nail that down, so I looked at the transcripts, and that's pretty much where it came out.

MR. KATZ: So I --

MR. ROLFES: I guess I was going to say those are things that we can keep in mind. I don't know if there's outstanding issues that we haven't responded to.

MR. HINNEFELD: Well, the first thing we do is we go look at the transcripts, and see what the discussion was, and see what a response would be or something to say about it. I think that's what we do.

I don't think we want to let that debate interfere with an SEC decision. you're

right, and you're exactly right. What happens on these sometimes is an SEC decision is made, and everything sort of stops.

Everybody's attention is diverted elsewhere, and so you still have these lingering Site Profile changes, whether you're doing it for all the claims or just the non-presumptive claims --

MR. FITZGERALD: Yes. I think for a couple of them --

(Simultaneous speaking.)

MR. HINNEFELD: That's sort of on the to-do list.

MR. FITZGERALD: For a couple of them, there seemed to be agreement that these numbers weren't quite right. But you know, when you skip that point, you know it's not an SEC issue anymore.

MR. KATZ: So I just -- I have this down as an action item then, that DCAS will review the transcript and report back to the Work Group.

MR. FITZGERALD: Yes. They might actually get a lot of this done quickly. The other matrix issues, I think, is just what we almost just did with neutron and with the external dosimetry, which is just sort of a -- you know, we've got a number of findings on the table.

But I sort of want to defend those for the sake of the Work Group, more than anything else, because I think it's easy to sort of get lost in the shuffle, when we have a total of something like 16 or 17 original matrix findings.

I think what we owe the Work Group and NIOSH is an update, and maybe what we can do is exchange that and get the matrix through the Work Group at least current, so we have that to work with.

But just as a thumbnail sketch for this meeting, what we're seeing is sort of SEC-significant issues. Not necessarily what the Work Group would recommend, but certainly

ones that still have that flavor would be this question on neutron, more the MCNP aspect of it, as to whether it's bounding for all systems that were handled and selectively discussed.

We're going to get into maybe some secure information, but that's something that ought to be addressed, put that to bed. The fading issues and some of the adjustment factors, I don't think those are as much an SEC question. I think those are definitely manageable.

As we discussed earlier, this question of back extrapolation of uranium and possibly thorium. I think we feel there's some real question marks on thorium. It's uranium and thorium, that question that we've spent some time on.

The adequacy and completeness, obviously that bares your analysis, and I won't say anything more about it. That was -- let me step back. The MCNP issue is the

neutron finding number 7 on the matrix. That's number 7.

The back extrapolation of uranium thorium, that's Issues No. 2 and 4, respectively on the matrix. The adequacy and completeness of internal and external are matrix Items 1 and 8, respectively.

MR. KATZ: Are saying -- I mean are you throwing those in the same bin, that are SEC Issues 1 and 8?

MR. FITZGERALD: Oh no. I'm just saying that they're not off the table, as far as being clearly not SEC-significant. It may turn out, from a completeness and accuracy standpoint, that with the NIOSH response it doesn't, you know, doesn't rise to an issue. But it's still current.

And we still have some more research on tritium dose estimation, in terms of the -- and this gets, this ties into the adequacy and completeness. There's some lingering questions we have to answer, and

that's Item 15. I think there's a wealth of data for tritium. So you know, I think that's not necessarily going to be an SEC-significant question.

But I think we need to answer some additional issues before we can feel comfortable and get it off the table. Sort of in -- that's sort of the SEC-significant bin. The bin where, I think, more information is needed, and I think the site visit's going to help is the firing and burial site issues. That was Finding No. 10 or Item No. 10 from the matrix.

We want to get additional information on Item 14, which had to deal with subcontractors and temporary workers, but I think quite frankly, that's leaning toward being a Site Profile question at best, or not an issue at all. So we're doing additional research on that.

I think as Kathy mentioned, we've done some initial look-see on incidents. But

when we go down to the site, we want to make sure that we have captured everything we need to on that. But I think you got the essence of where the concerns are, with how the incidents are informing this question of the event bioassays. I think that remains the same.

We originally had tritides or STCs on the need more information, but after the Germantown visit, I would definitely say, as I said earlier, that I think that's off the table. That's an SEC question for Pantex. I think it's more of -- we'll look for additional information. But right now, I don't think that's going to rise to that significance.

MEMBER BEACH: That's Issue 5?

MR. FITZGERALD: That's Issue No. 5. Likewise, for plutonium, which is Item No. 3. We would see that not being likely, and we would recommend to the Work Group that it would not likely be an SEC issue. All of

these, obviously, are subject to change, depending on if the Work Group has objections or questions.

There are an Item 17, HP/IH programs, which we don't think that's an SEC question. But with all the matrix, it certainly came from the Site Profile originally. Ditto with badge placement. I think the NIOSH explanation is certainly sufficient. That was Item No. 16. It was a petitioner issue originally, I think.

And then, of course, going back to the external dose issues we just mentioned. There's four findings that relate to that, that we dealt with at the last Work Group meeting, that in toto, I think there was an agreement that they look like, more like Site Profile issues. That's Item 6, 11, 12 and 13.

So I'll send something through Brad and Ted that would be sort of an update, based on that sort of binning, and clarify sort of what we can best describe as how we

got there in this forum. Then, you know, Mark or whomever, I think you would just need to, you know, agree or disagree or change or modify, whatever.

That would give us at least a baseline for the rest of the review, which would be helpful at this point. I think this original one, which is pretty lengthy, has gotten out of date. I think a lot of things have been addressed in different places.

MR. ROLFES: I think as a result of our last Work Group meeting, we tried to narrow it down to the few handful of issues that were the SEC issues, and that's where we brought our focus to.

MS. RAY: As an SEC petitioner, I'm interested in seeing a time line. Obviously, we're wondering how close we are to an SEC decision being made. This has been going on since 2006, and it does seem to me that we should be reaching a conclusion at some point, things like that all records

probably should already have been reviewed, but apparently they have not.

But if I could -- and my co-petitioners, if we could see a time line, we'd like to know how long all of this is going to take. I know Mark is saying that he has several things, and I was hearing an August time frame on something and a June on something else.

You know, that just keeps pushing all of this forward, and I think it's fair to ask for a reasonable time line.

MR. HINNEFELD: Ms. Ray, this is Stu Hinnefeld, the Director of the DCAS office, and I've got to say the Institute kind of shares your opinion, that we've been at this a long time.

MS. RAY: Yes.

MR. HINNEFELD: I think, but I'm afraid I'm not in a position to offer a time line today. This is a fairly complex thing that we have to deal with, and I'd just say --

I would just want to reassure you that your voice is not unheard by me or by my bosses in Washington.

MR. KATZ: Let me just add, this is Ted, Sarah, that I mean we're looking at, I mean from what's been discussed here, we're looking at another Work Group meeting as soon as -- in August. So and the Work Group has to prepare its conclusions to report out to the full Board.

MEMBER BEACH: Well, and that might be pushed out, because of the --

MR. KATZ: Well, at the soonest in August.

MEMBER BEACH: Yes.

MR. KATZ: I'm not -- I can't sign, seal and deliver that. But at soonest in August, and then as I said, the Work Group after it meets, if it has, can finish its business in the next meeting, which is not crystal clear at this point.

But if it can, and then it would

report out to the Board at the subsequent Board meeting, which after August is in the very beginning of December.

MR. HINNEFELD: It's early December, yes.

MR. KATZ: So there's actually room for more than one meeting for the Work Group to conclude its business, late summer and early fall, if that works out. Anyway, I'll just -- Sarah, I'm just trying to give you as much of a picture as I can.

MS. RAY: I appreciate that information.

CHAIRMAN CLAWSON: Have you --

MR. FITZGERALD: That's down to action item summary.

CHAIRMAN CLAWSON: And we're about out of time, so that would probably be the best thing to do, is to be able to go through what each side's responsible for, and I realize that you can' give a time frame. But you know, at least maybe an estimate, and so

forth, of what we've got. We've got the data adequacy that has been delivered; correct?

MR. FITZGERALD: Yes.

CHAIRMAN CLAWSON: You've got the -- so maybe I could just have Ted, if you've got the list.

MR. KATZ: Yes. Let me see if I can go through my notes and sort this out, what I have for action items. Let me just think how I've indicated them in my notes here.

Okay. So the first one I have is, and Mark, I'm sure, has everything I have too, but Mark committed to providing notes from the Site Research Database, on --

MR. ROLFES: Chemical analyses.

MR. KATZ: From the design laboratories.

MR. ROLFES: From some of the residue collected at the Pantex plant.

MR. KATZ: Right. That's the first item.

MEMBER BEACH: Is that the one that Kathy requested?

MR. KATZ: Yes, yes. Kathy requested that. Okay. NIOSH is to provide an analysis to SC&A. This is -- Mark mentioned recently about the issue of having followed up on some of the workers' reports about their exposures, and the example given was dark powder. But we'd ask that NIOSH provide those analyses. They're on the Site Research Database or they will be. SC&A is going to identify the 24 cases that Ron reviewed.

MS. ROBERTSON-DeMERS: Ted, this is Kathy.

MR. KATZ: Yes.

MS. ROBERTSON-DeMERS: They were supposed to also identify the 42 workers --

MR. KATZ: Exactly, right. I was going to go back up there, because I recall that you've had a group of cases to report on, to identify. DCAS is going to prepare a response to the data adequacy report.

DCAS is going to review the transcript and report back on the external dosimetry issues that we just discussed, and to report back is to report back a plan for how that's going to be handled going forward, with respect to the possibility of changing the Site Profile, or at least evaluating the issues further.

MR. ROLFES: SC&A has a worker interview report that you've written or worked on.

MR. FITZGERALD: It's in DOE clearance.

MR. ROLFES: Okay.

MR. FITZGERALD: It's been there for a while, so --

MR. ROLFES: And then SC&A --

MS. ROBERTSON-DeMERS: I have a kind of an update on that. I asked Mike for a status report on that. There are going to be two versions to that interview summary. So you need to review the full version when

you're in Germantown. What we're going to release is one eligible for public release. Are you following me?

MR. KATZ: Yes.

MS. ROBERTSON-DeMERS: Okay.

MR. KATZ: Okay. That's good to know.

MS. ROBERTSON-DeMERS: And Mike didn't know that, because I asked him yesterday. So he's still checking on it.

MR. KATZ: Thank you, Kathy. Then SC&A is going to provide this matrix update, and DCAS will respond to it as needed, elaboration, corrections, whatever. Those are all the items I have in my notes. I don't know if I've missed some. I could have easily.

MR. FITZGERALD: One item. This is -- we didn't really put a punctuation point on this. I was saying earlier the central issue of depleted uranium, you know, back extrapolation or however you want to term that

from the '89 incident, the '90 bioassay data.

I'd rather not leave that sort of -- because that is a central question, and I'm going to try to get some notes and then clear, try to get something to you. But I'd like to put that on a fast track, to sort of a fish or cut bait question on, you know, is there anything that collectively one can do to establish this bounding conclusion for the depleted uranium, the eight -- I guess it's eight. I thought it was four, the eight systems that actually involved the uranium, and just get past this point of, you know, it's the W28, it's not the W28. How do you know?

I mean it seems like we've kind of beat that one. But I really would like to, you know, do that in real time, to just establish one way or the other is this current approach sufficient to bound this, without getting into program reliability. But you know, do we have the goods, in terms of data

or not, and just bring that back to the Work Group, and closer to real time.

If we need Germantown, we have Germantown coming. So that's kind of a nice advantage. But I will go back and try to get that piece, now that it's been cleared, that has that new data point in it. I hope it's provided. I haven't seen it yet.

MS. ROBERTSON-DeMERS: This is Kathy, and to do add to that --

MR. FITZGERALD: Yes.

MS. ROBERTSON-DeMERS: We really need to resolve this issue with the units associated with the bioassays that you're using to back extrapolate.

MR. ROLFES: You mean the dpm per milliliter or something?

MS. ROBERTSON-DeMERS: Dpm per milliliter.

MR. ROLFES: We'll look at that also.

MR. FITZGERALD: Okay. But that

was the approach to the Work Group, is just, you know, I still see this as the critical path for resolution by the Work Group on Pantex SEC. I mean that's another issue that they're beginning to trend toward resolution.

This issue is not as much, and I think this -- I think this would help respond to the timeliness issue, that we really have to just settle this out, and I'd like to think we can do that.

We have enough of the classified reviews and with the onsite visit, I think we're in a good position to know if we have everything we need to settle that issue, and bring it back and get it, you know, in a forum that lays it out.

If we don't have the goods, then report that back, so that the Work Group has enough to make a decision on it. I think that's the central SEC question. The thorium is a little different. I think that one we will have to talk about in Germantown.

So I think those -- if we can get those issues done, I think the rest of it will fall into place, and we'd be able to talk closure in the fall.

MR. KATZ: So for the DU, the substantiating sort of evaluation that you're looking for has to do with then, what Mark discussed. I think that there are these other urinalysis results, and there are these other air monitors that are not being used for dose reconstruction, because of their preference. But that needed to be examined, as to whether those suffice to shore up the argument or not.

MEMBER BEACH: Was that the 1956 data you were talking about?

MR. KATZ: 1959 prior investigated, and forward, whatever.

MEMBER BEACH: '59, okay.

(Simultaneous speaking.)

MR. KATZ: Is that what you're talking about putting on the table and getting cleared up?

MR. FITZGERALD: We had the data accuracy and completeness, which I think is our best treatment of what we see as the data that's available. We have additional data that may or may not have found its way into that analysis. But if we all have a grasp of what information is out there, and the reliability or use of that, you know, usability of that information.

You know, I think there's been some confusion on air sampling, for example, and taking that back and forth, and whether or not that either substantiates or not the bioassay. Well, I think you have the analysis that Kathy was talking about, and that's our best cut, how we view that.

There seems to be some agreement on that. But if we can sort of align all this data and say okay, you know, where's that leave us, and you know, what I was saying earlier. You have several options, I think, and you know, I don't think the W28, the '89

event is necessarily the only option.

It may have been the option four years ago, when ER or three years ago, whenever it was when the ER was settled. But you know, now that we've gone through all this and have seen maybe additional data by this point in time, and we've done more analysis, maybe another option will present itself, or not. I don't know. But I'm just saying I think we're kind of stuck on that one position.

I just want to reexamine that, and I think we've said everything we need to say about where we are on that, and I'd like to think in real time we can settle that out, and at least bring that back to the Work Group, so that -- from a time limit standpoint.

These other things can go ahead and go to resolution. But that one to me is the tough one, that has to be settled above and beyond everything else if we're going to get this done. So that would be very helpful.

So I would just recommend that if the Work Group wanted to phrase it in a certain way.

I mean there's not a deliberate A, B or C, but that we acknowledge that as an ongoing action from this meeting, that SC&A and NIOSH will, you know, work in real time to address that issue.

CHAIRMAN CLAWSON: That's the key to this whole issue that we've been dealing with it a long time. So that's one of the things that we need to push forward on, to try to come to some kind of resolution on.

MR. FITZGERALD: Right, for that.

MEMBER BEACH: So that's an action item for NIOSH then, to supply that data.

MR. FITZGERALD: No, it works both ways. It works both ways.

MEMBER BEACH: Well, no. They give it to you, and then you review it and --

MR. FITZGERALD: Yes. Well, what I'm going to do when I get back is try to send to Mark, as a memo, what DOE cleared, as far

as some of the information that we've identified. Then I'll try to frame it in the memo, kind of what this is all about, and Mark, you know, basically hopefully can respond in real time, and just not use meetings.

But just use the technical conference calls or memos, and just get this thing going. So by some time in the summer, we know where we stand, so that the meeting may just be a chance for the two parties to brief the Work Group.

Okay, you know, you've seen the paper, but this is what it means, put you in a position to decide what you want to do.

CHAIRMAN CLAWSON: But you'll keep the Work Group --

(Simultaneous speaking.)

MR. FITZGERALD: Oh, I mean everything, you know, everything will go through the Work Group and Ted. You know, you'll be the traffic cop. It will go back

and forth.

MR. KATZ: Is that clear?

MR. ROLFES: Yes, that works for --

MEMBER SCHOFIELD: On the issue of the neutrons, we don't really have -- we're not really that far apart.

MR. FITZGERALD: No.

MEMBER SCHOFIELD: Okay.

MR. FITZGERALD: No. It's just that, you know, it was neutron/proton ratios. We had a number of issues, and then based on the Mound experience, I think NIOSH proposed a better way to go about this, using MCNP.

We examined it in detail at Mound. So when it came up to Pantex, you know, we said well, you know, philosophically we're there, but there are some issues that we want to ask or questions we want to ask.

MEMBER SCHOFIELD: So my only thinking there was that, depending on the material types --

MR. FITZGERALD: Well, that's why we were hedging our discussion a little bit, because you know, the material type we're talking about is nuclear weapon systems.

MEMBER SCHOFIELD: Right.

MR. FITZGERALD: So you can't really get into --

MEMBER SCHOFIELD: And I have actually done hands on with the different ones.

MR. FITZGERALD: No, no. So what we're saying is yes, well the MCNP has to have parameters that envelope all those variables.

MEMBER SCHOFIELD: Okay. That's where I was trying to get, without saying too much.

MR. FITZGERALD: Yes. That's exactly it. So it's not as clean as the MCNP at Mound, where a lot of it was straightforward. Here, it has to reflect the parameters that come out of the different systems.

CHAIRMAN CLAWSON: Well, and a lot -- it would be nice if we'd be able to have some kind of a response, to be able to look at it and --

MR. FITZGERALD: The only other option then would be a generic pit, but you know.

MR. KATZ: Thank you very much, Joe.

MR. FITZGERALD: All right.

CHAIRMAN CLAWSON: But just talking about the Germantown meeting, you know, a lot of this could possibly be discussed if we had something to be able to discuss then.

MR. FITZGERALD: Well, we'll have something, you know. I just think it depends, and that's one of the reasons I'm raising it. It's a month and a half, so maybe.

MR. KATZ: Yes, and this is a busy month.

MR. FITZGERALD: Yes, it is.

CHAIRMAN CLAWSON: Okay. Is there anything else that needs to be brought up before the Work Group?

MS. ROBERTSON-DeMERS: Brad, this is Kathy.

CHAIRMAN CLAWSON: Yes.

MS. ROBERTSON-DeMERS: Okay. I wanted to give you an update, because I know I told Mark and you and Joe. We were tentatively scheduling a site visit to Pantex the week of May 16th. Pantex has raised issues with funding, and where it stands right now is that Pantex and DOE Headquarters are going back and forth, to determine whether they have the funding to facilitate a visit.

I need to know who wants to go, because that was one of the questions I got asked by Robin McLuren, because apparently the more of us that go, the more expensive it is. So think about that and shoot me an email. This is primarily a trip to review records, probably many records that NIOSH has already

seen.

The data capture plan will feed out shortly. What I will do is I will post it on the O: drive, under our SC&A Data Capture Plan, so people can look at it.

CHAIRMAN CLAWSON: Okay.

MS. ROBERTSON-DeMERS: As soon as I get a concrete answer from Pantex and DOE Headquarters, I'll let everybody know. But there's a possibility it might have to be rescheduled.

MR. FITZGERALD: Well, wait a minute. How strong a possibility? It's May 3rd.

MS. ROBERTSON-DeMERS: Well, no. It's May 16th. It's the week of May 16th.

MR. FITZGERALD: Well, I know it's May 16th --

CHAIRMAN CLAWSON: You've got to be able to travel.

MS. ROBERTSON-DeMERS: They said I'll know today or tomorrow.

MR. KATZ: Okay, that's fine.

CHAIRMAN CLAWSON: Kathy, I think that's what you told me last week.

MS. ROBERTSON-DeMERS: I know. That's what I keep getting told.

CHAIRMAN CLAWSON: I understand. We'll take a look at it and we'll go from there.

(Simultaneous speaking.)

CHAIRMAN CLAWSON: So okay. I appreciate the update on that.

MR. ROLFES: Some of the data, I think -- now Kathy, correct me if I'm wrong. I think some of the focus of this trip wasn't necessarily on Pantex, but was related to like Clarksville and Medina.

MS. ROBERTSON-DeMERS: There's a mixture of records. We are pulling some data related to Medina and Clarksville.

MR. ROLFES: Okay.

MR. KATZ: Okay. Are we adjourned?

CHAIRMAN CLAWSON: Is there anything else? Does anybody have any questions or are what the action items are clear?

(No response.)

CHAIRMAN CLAWSON: If not, we're adjourned.

MR. KATZ: Thank you, Mr. Chairman. Thank you, everyone. Have a good day.

(Whereupon, at 2:01 p.m., the meeting was adjourned.)