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

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TUESDAY
MAY 4, 2010

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The Work Group convened in the Frankfurt Room of the Cincinnati Airport Marriott, 2395 Progress Drive, Hebron, Kentucky, at 9:30 a.m., Bradley Clawson, Chairman, presiding.

PRESENT:

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

ALSO PRESENT:

TED KATZ, Designated Federal Official
NANCY ADAMS, NIOSH contractor*
ISAF AL-NABULSI, DOE*
HANS BEHLING, SC&A*
RON BUCHANAN, SC&A
MEL CHEW, ORAU Team
LARS FUORTES, University of Iowa*
JOE FITZGERALD, SC&A
STU HINNEFELD, DCAS
EMILY HOWELL, HHS
JENNY LIN, HHS
JOHN MAURO, SC&A*
JIM NETON, DCAS
SARAH RAY, Pantex Petitioner*
MARK ROLFES, DCAS

*Participating via telephone

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

(9:33 a.m.)

MR. KATZ: Good morning, everybody, and welcome, everybody in the room and on the line.

This is the Advisory Board on Radiation and Worker Health, Pantex Working Group. My name is Ted Katz. I am the Designated Federal Official for the Advisory Board.

We are getting started here, beginning with roll call. Beginning with roll call in the room, please, everyone, state whether you have a conflict of interest issue as well as self-identifying. So, Board Members, beginning with the Chair in the room?

CHAIRMAN CLAWSON: I'm Brad Clawson. I'm the Work Group Chair for Pantex. I have no conflict.

MEMBER BEACH: Josie Beach, Work Group Member. No conflict with Pantex.

MEMBER PRESLEY: Robert Presley,

Work Group Member. No conflicts with Pantex.

MEMBER SCHOFIELD: Phil Schofield, Work Group Member. No conflicts with Pantex.

MR. KATZ: Just checking on the line, any Board Members on the line?

(No response.)

Okay. We are expecting Mark Griffon. He is also a Member of this Work Group, but his plane was delayed this morning.

Then, going to NIOSH ORAU team in the room.

MR. HINNEFELD: Stu Hinnefeld, Interim Director of the Division of Compensation Analysis and Support. I don't have a conflict with Pantex.

MR. ROLFES: Mark Rolfes, Health Physicist from the Division of Compensation Analysis and Support.

DR. NETON: Jim Neton, Division of Compensation Analysis and Support. No conflict.

DR. CHEW: Mel Chew, ORAU support

of the Office of Compensation. No conflict.

MR. KATZ: And on the line, NIOSH ORAU team? Any members of the NIOSH ORAU? Are you expecting anyone on the line?

MR. ROLFES: There might be a couple of people.

MR. KATZ: Okay. Not at this time.

SC&A, in the room?

MR. FITZGERALD: Joe Fitzgerald, SC&A. No conflict with Pantex.

DR. BUCHANAN: Ron Buchanan, SC&A. No conflict.

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

DR. MAURO: John Mauro, SC&A. No conflict.

DR. BEHLING: Hans Behling, SC&A. No conflict.

MR. KATZ: Welcome to both of you.

Okay, then, HHS, other government officials, or contractors to the government in the room?

MS. HOWELL: Emily Howell, HHS.

MS. LIN: Jenny Lin, HHS.

MR. KATZ: And on the line?

DR. AL-NABULSI: Isaf Al-Nabulsi, DOE. No conflict.

MR. KATZ: Welcome, Isaf.

MS. ADAMS: Nancy Adams, NIOSH contractor.

MR. KATZ: Welcome, Nancy.

Okay, there are no members of the public in the room. Any members of the public, petitioners or other, who want to identify themselves on the line?

MS. RAY: Sarah D. Ray in Amarillo, SEC petitioner.

MR. KATZ: Welcome, Sarah.

MS. RAY: Thank you.

MR. KATZ: Okay, that sounds like it for the moment.

Now let me just remind folks on the phone, please mute your phones except when you are addressing the group here. If you

don't have a mute button, use *6 and then hit *6 again to take it off of mute and please don't put your phone on hold at any point. Just hang up and dial back in because hold will disrupt the call for everyone else.

Thank you.

And, Brad, it's yours.

CHAIRMAN CLAWSON: I would like to welcome everybody here to the first Pantex Work Group meeting we have had.

I wanted to lay a little bit of groundwork. I was asking earlier. The petitioners filed on December 6th, 2006. It was qualified in November 20th, 2007. This is the first time that the Pantex Work Group has been able to meet.

We have had an evaluation that has been out, basically, over a year. We've got the response to that and this is what we are discussing today.

For the petitioners, and so forth, on the phone, I wanted to make sure that they

have a copy of the matrix that was sent to them.

Sarah, do you have a copy of what we are going over?

MS. RAY: Yes, I do, and I have it printed and with me.

CHAIRMAN CLAWSON: Okay. Thank you very much.

One of the things that I want to bring up is, due to dealing with Pantex, we have many different issues that we have to deal with, but one of the big ones that we have to always keep in the back of our mind is classification of things. We deal with a lot of different objects, and so forth like that. We always need to make sure that is in the back of our mind and keep our national security forefront with all of this on this.

I guess what I would ask right now from Joe is, to kind of give us an overview of where we are at on these issues, kind of over the treetop, or what, just kind of a basic way

of where we are at, 40,000 feet, we're good.

MR. FITZGERALD: Good morning. This is Joe Fitzgerald.

This being the first Work Group meeting, I thought it would be helpful before we get into the trees, you know, these reviews start going into the specific issues and you quickly sort of lose the broad overview, sort of the gestalt of what we are looking at.

I wanted to just outline in general where our review -- you know, SC&A conducted the Site Profile review about three years ago now on Pantex. We haven't done any other additional review. We have been waiting for a NIOSH response to the SEC issues matrix and, also, for this Work Group, obviously, to provide some direction.

But back in 2007, when we looked at these issues, I think we came up with some specific areas of concern, areas that we would want to do additional work with and we would want to hear a NIOSH response.

Broadly speaking, we have issues on the external side, external dosimetry, but it is pretty clear most of our issues focus on the internal side. There we have, I think, a fundamental difference in how one looks at the operational history and the dosimetry and practices of Pantex. I say, fundamental because I think we are just on two different pages, which challenges, I think, this Work Group, and it is going to require, I think, a lot of spade work, in essence, because I do find ourselves quite far apart, probably more far apart than some other reviews.

I am going to read some quotes from the Evaluation Report, but I just want to amplify why I think we have these concerns. We find that the ER and the most recent response to SC&A's matrix, the comments are grounded in the acceptance of a premise, and one that is shared by DOE, DOE management. And I once was part of DOE management, so I am saying that very objectively.

The weapon operations at Pantex were, and I am going to use this quote, technically contamination-free and provided the confidence that any uncontained contamination would have been detected and dealt with immediately, unquote. That is a pretty tall order for any DOE site.

I want to point out that that overriding assertion or assumption is for the operating history of the plant. This is a plant that opened in the 50s, up through the present, and over 50 years of operating history, if not close to 60. That is a pretty tall order as a going-in proposition.

NIOSH also accepts the premise that, quote, there is absolute assurance that incident-based bioassay sampling was appropriate and adequate.

Okay, again, we are talking about a 50-plus operating history where we are claiming absolute assurance that the incident-base -- this is events-driven bioassay -- was

appropriately managed and administered. I'm not talking about the 90s and 2000s. I am talking about the operating history of the plant.

Again, I think in the Site Profile review and subsequent reviews, given sort of I would call it the absolute nature of those overriding assumptions, we wanted to sort of query the basis for those statements because, again, I think there is hardly any room for equivocation or debate, given sort of those assertions.

We understand that a lot of these conclusions come from interviews with the health physicists at the plant, come from reviews of the requirements and procedures at the plant. Then, there is a lot of testimonies that I think that are alluded to about the virtually pristine nature of the handling of weapon components at the plant during its operating history.

So, yes, you reach the

conclusion -- and again, this is summarizing the ER, but just in the areas of concern -- that routine bioassay would not have been necessary under those circumstances, that you could have relied upon this very strong rad control program and could have relied upon the events-driven bioassay in cases to basically give you the radiation dose that you needed to record, and that this program needs to dose reconstruct.

So, again, the preamble to the NIOSH response that we just received about a month ago sort of starts with that argument that most of the concerns that we have raised in the Site Profile Review -- and again, this is all we have put on the table; the Site Profile Review and the issue matrix came from that -- are groundless because, if one assumes all those assumptions, then all these other issues, such as what about the possibility that maybe operations back in the 50s, 60s, 70s, and 80s were not necessarily

representative of operations in the 90s and 2000s, then it kind of gets swept away. We have no basis for making that.

I would turn that around. I would say that, given the wholesale change that occurred at Pantex in the early 90s -- you have to understand here's a plant that, given its level of secrecy and classification, pretty much operated without a whole lot of DOE supervision. I am going to say that because I think that is pretty much a matter of record, that there wasn't a whole lot of DOE overview or oversight of facilities, particularly weapon facilities, in the earlier days.

That was the genesis of the Tiger Team reviews in the late 80s and early 90s, was to get DOE to independently evaluate its own contractors because there was a sense that there wasn't a 20/20 perspective of what the operational program, safety and health programs, were.

That led to some very fundamental changes in the Radiation Protection Program of Pantex in the early 90s. That led to additional audits and reviews. That led to bringing in Battelle and this is kind of unprecedented, bringing in Battelle to basically manage the health physics program.

I know Jerry Martin. I have talked to Jerry many times about that. That was sort of during my time frame at the Department.

When you basically bring in another contract unit and HPs from the outside to run the program, that is an admission that you really don't have a foundation program in place and Pantex, essentially, did not. It had a small number of HPs, and certainly the kinds of audits and reviews that came out of investigations before that time -- and the Defense Board was really on to Pantex in the early 90s as well.

All this attention was for two

reasons. One, following the Cold War, the Department was going through a major nuclear weapons dismantle program. There was a real concern that the rad protection program; Pantex would not be up to the job of having to process and store and do the kind of level of dismantlement that would be required. So, there was a real concern that you had to beef up that program.

What I am leading to is, if we are talking about the need to normalize post-1990 or 1990-and-after data to, in fact, apply it retroactively -- and this is what a lot of the Evaluation Report is recommending, that we take the data that we have beginning in the late 80s, the early 90s, and forward, and back-extrapolate, use it for the previous 40 years of operations.

I think it is incumbent upon NIOSH to demonstrate that not only can you normalize the operational representativeness of the operations in the 90s and 2000s to those

earlier years, and I would suggest that the argument that you had this major post-Cold War dismantlement belies the fact that you had a number of weapon systems throughout the history of Pantex -- I mean I am talking the post-World War II and, you know, Manhattan. You had weapon systems that were being taken out of commission all the time. You know, there was modernization going on through the 50s, 60s, 70s, and all those systems had to be dismantled and the material reprocessed, and a lot of it was down at Pantex.

So, this notion that the 90s represented a period that at least was more, quote, radiologically dirty than the earlier time frames, and therefore, you could use that as an upper bound for the previous years, I think is flawed. I think one has to look at the operations and decide, did you, in fact, have operations in the 50s and 60s that could be bounded by operations in the 1990s and 2000s? I don't think the case has been made,

quite frankly, and that is a very important issue if you are talking about back-extrapolating over that length of time.

I have not seen that level of back-extrapolation in any other SEC, to actually take a relatively small amount of data. I am not talking about a lot of data, but they started collecting data in the throes of this revamping of the health physics program after the Tiger Team, and whatnot, in the early 90s, in Defense Board pressure, and applying that retroactively.

Now, beyond that, I think there's some issues that we raised, which I think have been discounted in the response, but I think are still very, very important, that you are also having to demonstrate, I think, and it is incumbent upon NIOSH to demonstrate, that the monitoring, whether it is air sampling, swiping, you name it, that would be the basis for your 40 DAC-hours or anything else is also representative. You can go backwards and take

some of the procedural requirements of applying these kinds of dose data, based on monitoring, and assume that the monitoring practices and technologies were similar enough that it would make it justifiable to do so.

Again, I don't think that is the case here, either. When we get into specifics, and we have this exchange on these specific issues, whether it is thorium or plutonium, I just want to make the case that each one is going to still have that same theme: can you take the modern-era operational data, operations, the monitoring information and data, and your rad protection, rad controls -- now the presumption that the rad program would have done the right thing because it was required or would have swiped or would have monitored and then done an event-drive bioassay, can you make that assumption based on the modern era and apply it backwards? Okay?

Based on the interviews that we

have done, and we are not done yet, and based on documentation that we have reviewed, we don't think that is necessarily the case. I think a lot of this ER and lot of this review comes down to establishing whether those premises, those assumptions, and going-in propositions hold.

I am just saying that, in a broader sense, that is where this review stands. It stands at this question of whether you can take the modern data and apply it backwards and show that the operations, the monitoring, the rad control program, the exposure potentials were such that you can do that with an adequate basis. I think that we can get into specifics, but in a broader sense that is where we have the biggest problem.

Based on the petition and the petitioner's comments, I think they share that concern as well, having lived it and having seen some of the contamination issues, and what have you, upfront.

So, I just wanted to again preface again we get quickly into the weeds, and we will quickly get into the specific issues. But that is where I think we have the most fundamental problem with how the Evaluation Report reads right now.

MR. ROLFES: Okay. Thank you, Joe.

This is Mark Rolfes.

Just to address a couple of things you had expressed concern about in a generic overview-type sense, from the very beginning of plant operations, there wasn't necessarily a Radiation Safety Department. However, there was a Safety Department and the individuals that were involved in general plant safety were primarily concerned about high explosives.

In the very early time period, there really weren't many radioactive materials onsite besides uranium. The people from the very beginning that were involved in

the safety of the entire plant, when they had concerns about handling a particular component or monitoring people, they usually would correspond in the early days with Los Alamos National Laboratory. They would speak with health physicists and safety professionals at the labs to determine what the monitoring requirements for this program or for this operation were.

As far as our statement about operations involving contamination-free components, that is generally true with an assembly and materials that are brought onto the site that ship from Rocky Flats, from Y-12 generally are free of contamination. With depleted uranium, there's always going to be some removable contamination on the uranium part.

But there were requirements to handle things with gloves, vinyl gloves or cotton gloves in the early days, in the very beginning as well.

Now when you are involved in doing a disassembly, there is a potential for contamination to be released, and that is typically just uranium contamination as well. Plutonium components are always encapsulated at the site.

When I am speaking of contamination, I am speaking about radiological contamination and not chemical contaminants or other materials.

Let's see, even though in the very beginning individuals didn't participate in the routine bioassay program, the level of contamination encountered, if there were contamination, was typically pretty low. An individual would be given a bioassay if there was an event that occurred to breach the encapsulation and cause contamination.

Also, during operations involving radioactive materials in the cells and bays, those had routine continuous air monitors and we don't have all the results. However, we do

have a good sampling of the air monitoring data from the locations where operations are done.

In the more recent time, we have much more swipe data, much more information, including bioassay data, that gives us a good idea of what the true contamination and exposure potentials were.

As far as disassembly work, yes, that is true that there were some disassemblies and inspection operations done in the early days. However, you also have to keep in mind that Pantex was not the only site that was involved in doing either assembly or disassembly work. The Iowa Ordnance Plant was also operating up until 1974. So, they were sharing the workload with Pantex.

Now some of this other disassembly and inspection and weapons stockpile maintenance work were done at other sites, such as Clarksville and Medina. So, Pantex was one of four sites at that time that was

involved in doing some of the disassembly and retirements of earlier nuclear weapons in our national stockpile.

It was after 1975 that Pantex received work from the Iowa Ordnance Plant, and Clarksville and Medina had shut down in the 60s as well. So, Pantex became the single spot that was involved in our nation's nuclear weapons, assembly, disassembly, and maintenance.

So, really, the amount of work that Pantex had for 1975 forward, they would have been involved in more aspects of our nation's nuclear weapons programs. That is also about the time that the number of disassemblies began to increase, and with the increase in disassemblies, there was also an increase in exposure potential for contamination, for tritium exposures, for uranium exposures.

You had mentioned thorium contamination and that also jumped into my

head. I recall seeing a report in the 60s where a continuous air monitor had detected, I believe it was, thorium progenies and thoron.

They had done an investigation because of the concern about contamination. Upon looking and counting the air filters, they determined that it was actually radon and thoron contributions. So, it wasn't really thorium contamination.

I guess that is my brief overview, too. I would be happy to answer questions or go through specific topics, if you would like to do that now.

CHAIRMAN CLAWSON: No, I think you both have given kind of an overview. I think the best thing that we can do now is to start going into the matrix and be able to discuss these issues.

SC&A has given a review. NIOSH has put their position. SC&A has issued a view. So, I guess we will just start off with the first items.

One thing I would like to make a comment on is, when this originally started out, some of these will become Site Profiles, but we have singled out what are the SECs because we really have not been able to go over this matrix and correct some of the Site Profile issues that also have come up in that. I just wanted to make that upfront. This has been a review of the SEC, and that is what we are trying to maintain, too, but we will have some of them that will come in will be Site Profile issues.

So, I will turn it over to Joe.

MR. FITZGERALD: Well, I'm not sure I am going to paraphrase the response we just got. I mean, I think -- just a little bit on the chronology. We derived from the Site Profile Review a list of potential SEC issues. We didn't take everything, but we kind of highlighted those that seemed to have SEC consequence or for which there was some clarification that would be useful to get as

part of the process.

NIOSH has just provided about a month ago a response to that matrix. We haven't had a chance to do the necessary spade work, not to mention get it cleared and everything for this meeting. So, what I would suggest is maybe, rather than my paraphrasing what I read and your response, just to have you outline just pretty much in the sequence that is in the response. I have the response here. We can just go through that.

I would offer that we can provide maybe a reaction at this point, understanding that we have read it and everything, but we haven't had a chance to do some additional validation and additional work specific to the response. But I think, as I was saying earlier, some of these issues are not so technical we can't, frankly, at least tell you where we stand at this point and what we would intend to do.

That puts the Work Group in a

position, I think, to decide if there is anything specific the Work Group would like to request of us from here on out, this being the first opportunity.

Do you want to do that?

CHAIRMAN CLAWSON: That would be fine.

MR. FITZGERALD: I think adequacy of internal dose records, which I think tracks pretty well with the matrix and your response, I think that was the first one.

CHAIRMAN CLAWSON: That was the first, yes.

MR. FITZGERALD: Yes. Is SC&A issue number 1 accuracy of internal dose records?

MR. ROLFES: Did you want me to respond, Joe? I'm sorry.

MR. FITZGERALD: Oh, no. I'm just saying I could paraphrase your response, but I feel like maybe it would be better if you --

MR. ROLFES: Oh, okay. I didn't

know.

MR. FITZGERALD: You know, I have kind of jotted down some notes on your response, but it might be better for you to summarize your response, and I can then react to it.

MR. ROLFES: Okay. I didn't know if you wanted to present your review first and then our response to that.

CHAIRMAN CLAWSON: No, actually, we are responding to yours. We just want to make sure that you have clarified correctly to us.

MR. KATZ: At least for Sarah's sake, I mean it seems like there ought to be some paraphrasing of the initial finding that he is responding to, so that there is sort of a whole story for each of these issues.

MR. FITZGERALD: All right.

MR. KATZ: Otherwise, he is speaking out of the blue.

MR. FITZGERALD: Okay. Thank you,

Ted. That is a good point.

I am going to just outline from our issues matrix. One concern we had was the accuracy of internal dose records. Again, this is outlining what we found. During essentially all years under evaluation there was no Pantex bioassay program. I am talking about a routine bioassay program for uranium, thorium, and plutonium. Instead, it was a bioassay was performed on an event-driven basis. In other words, if there was an incident or suspected exposure, they would follow through and conduct bioassay.

There were procedures that required some additional monitoring in terms of air monitoring and in terms of bioassay. But, again, the question that we had is as to what extent that was rigorously applied and implemented. Based on interviews, it was determined that that was not uniformly implemented.

So, again, I think the question in

this regard is, did the practice historically -- and this is going back in time -- match the procedures and expectations? If, in fact, it was a rigorous, event-driven bioassay program, was that, in fact, followed in all cases, such that the internal dose records could be considered complete enough or adequate enough for use in dose reconstruction? So, that certainly is the essence of it.

And the routine bioassay program for nuclides other tritium occurred mostly beginning in 1990-91, that time frame. That was, again, as I said earlier, in response to a lot of outside pressure to institute a program, a routine program.

We did not see a historic record that there were triggers in place, in other words, objective triggers, from air sampling or whatever, that would have been used, in fact, to do event-driven bioassays. So, certainly in the modern era you have criteria that, once you achieve those criteria, you

would, in fact, do bioassay. It is clear that those criteria were used in the earlier days.

Except for a single measurement made for plutonium 239 and americium 241 at Los Alamos in 1978, we couldn't find any records in in-vivo measurements in the period from 1951 through 1991. We raised this a little later in a separate issue, but the in-vivo whole body counter capability certainly gives you the ability to know if there is any uptake of your longer-lived nuclides, whether it is plutonium or uranium, or whatever.

And, yes, you have bioassay, but the in-vivo gives you the capability of knowing if there's that uptake that has taken place. There's individuals, as we will get into later, that were sent offsite, in fact, to be whole body counted because the capability didn't exist, and there was a need to know that.

Again, the quantity of internal dose data at Pantex, compared with almost all

other sites, is relatively low. That, of course, is understandable because it wasn't collected.

So, I think the perspective we have here is we have a situation where there is a paucity, a lack of internal dose data, very little internal dose data, particularly before 1990-91. I don't think that is contested. The question is, given that lack of data, can adequacy be addressed by doing a back-extrapolation of the data that you do have in the 90s and beyond? We question whether that is feasible.

MR. ROLFES: Thank you, Joe.

Yes, I certainly agree that there are a low number of bioassays at Pantex, but from everything that I see, that is commensurate with the level of exposure potential on the site. I mean, this really makes sense to me, just because everything was encapsulated with the exception of uranium. Then, in the more recent time period,

beginning right around the late 60s/70s, that is really when the routine tritium bioassay program got into effect.

They were monitoring, I believe, starting in 1972, they had a routine tritium bioassay program. On their bioassay sheets, they had noted that they should sample 10 people with the highest potential for exposure in 1972.

Prior to that time period, they had actually done some tritium urinalyses, but the method that they used had a pretty low detection -- or excuse me -- a pretty high MDA. It was a pretty insensitive method, but it does show that they were looking in to see if people did have tritium exposures.

Looking back at the records, I recall seeing some of the first uranium bioassay results in 1959. There were also plutonium bioassays that were taken in 1961 as a result of a breach in confinement of plutonium. They had been working and breached

the integrity of the pit, and had immediately realized that an incident had occurred. The individuals that were involved in that operation were requested to provide urine samples. Then, subsequently, because there was contamination involved, they had developed a procedure to decontaminate the area.

So, if you take a look, there were health physics precautions that required monitoring in 1961 for the individuals that had gone back into the area to decontaminate. They had basically explained how they had gone in and put paper on the floor. They described the monitoring requirements throughout the contamination, how the materials were decontaminated.

Then, those individuals that were involved in that decontamination event had also participated in a plutonium bioassay program. From what I recall, the bioassay samples were analyzed by Los Alamos National Laboratory.

So, from what I see, the routine operations in the early time periods didn't typically have the potential for significant intake of materials of uranium, certainly not plutonium. The most likely would have been tritium. That is one of the radionuclides for which we have the majority of the bioassay results.

Let's see, you had mentioned about some individuals being counted in an in-vivo counter offsite. I do recall seeing, with the 1989 contamination events, there were some uranium contamination events that occurred in 1989. The individuals that were involved in that, they had actually gone back and reconstructed all individuals who had worked in this area on this program and developed a list of individuals who should be counted by the Hogason in-vivo counter.

Those individuals were also subsequently, a few months down the road, their urine was sampled for uranium, and that

was analyzed by Y-12.

MEMBER BEACH: Mark, can I jump in and ask a question?

This is Josie Beach.

MR. ROLFES: Yes, Josie.

MEMBER BEACH: Is there a list of incidents on the O: drive anywhere between 1951 and 1991 that occurred?

MR. ROLFES: Yes, we actually have all the incident reports that were available to us from Pantex. They are all in our Site Research Database, and usually their title is like Radiation Incident Report or --

MEMBER BEACH: So, there's not one, 2,000, all of them, I would have to go look --

MR. ROLFES: There should be a listing of various incident reports. However, some of the incident reports might not have been related to a radiological contamination incident. There were many incidents involving high explosives. There were also incidents

involving chemical exposures as well. So, that type information, if it had some bearing on the dose reconstruction process, we would have requested that. That should be in our Site Research Database.

I believe there are a couple of listings that are available in the Site Research Database, but I would have to confirm that and get back to you to provide confirmation.

MEMBER SCHOFIELD: Mark, I need to make a comment.

MR. ROLFES: Yes, Phil.

MEMBER SCHOFIELD: It relates to what you said. If you work with enough radioactive materials, you are going to have incidents, not necessarily detected at that time. The use of cotton gloves, that won't stop a smearable contamination from getting to you. It will go through cotton gloves.

Furthermore, if you are not doing a routine bioassay, unless they are aware they

have had this problem happen, they don't know. Also, it may show up as contamination. It shows up on a piece of equipment they are using. They go one day, two days, six months. Without this routine bioassay, you don't know when they have ingested that contamination. Hand-mouth thing. Very simple. It happens at every nuclear facility in the nation and the world. It is going to happen and it does happen.

MR. ROLFES: What radionuclide are you referring to when you are talking --

MEMBER SCHOFIELD: It doesn't matter which one. It doesn't matter which one. Uranium, plutonium, it doesn't matter.

MR. ROLFES: Well, it does, but --

MEMBER SCHOFIELD: No, it doesn't because you have that potential of uptake if it is a smearable contamination. The smearable doesn't mean it gets airborne. So, your air monitors may not pick it up. I would testify to that to a court of law from

experience. It does and can happen.

MR. ROLFES: Let me explain, then, for tritium operations, that is certainly more likely, if you are wearing cotton gloves, you are certainly going to have a much more likely potential for tritium to migrate through those cotton gloves than if you were wearing vinyl gloves or something. But, even then, if you only wear one set of vinyl gloves, tritium will still migrate through those, and you can have tritium absorption occur through your skin.

With uranium, yes, that is possible. From the very early time period, I cannot say that there was never an incident, but we actually did interview the people that received components onsite. One of the very first things for a pit that was sent from Rocky Flats -- Rocky Flats would monitor the pit before it was sent out to the site. Then, upon receipt, it was also monitored to look for contamination.

We had spoken with a Lawrence Livermore National Laboratory health physicist to determine what types of contamination would be encountered on a pit. We were told that they rarely, if ever, would detect any materials on the surface of the pit.

We had gone back and looked at all the records, and there were some occurrences which breached the integrity of the pit. As I just mentioned, for plutonium contamination the individuals, when such an incident like that occurred, it was a big deal because you were dealing with special nuclear materials. They were protected. Access was controlled to those materials, and it was an incident. It was a major deal. It wasn't something that could easily be disguised or covered. It certainly attracted people's attention to the event.

DR. NETON: Mark, how was that contamination detected, though?

MR. ROLFES: The contamination,

the 1961 plutonium incident was a result of the continuous air monitor detecting something above 4.5 MeV alpha particles, I believe is what the trigger point was still.

The individuals had actually realized that they had a problem prior to that CAM alarming though. They had actually gone out of the cell and contacted Radiation Safety.

There were workplace controls in place in that specific area which detected the contamination release.

DR. FUORTES: Excuse me, Ted.

CHAIRMAN CLAWSON: Hello.

MR. KATZ: Hello.

DR. FUORTES: Hello. Could somebody introduce a procedural issue. One, when petitioners be allowed to respond to these impressions?

MR. KATZ: So, Lars, I sent out -- this is Lars, right, Fuortes?

DR. FUORTES: Yes.

MR. KATZ: Hi. It's Ted Katz.

I sent out an agenda, and that is one of the reasons I laid out some bullets under that agenda. I don't know if you received it or not, but right now we are going issue by issue through matters. So, since I think it is better to address questions germane to a particular issue while it is on the table, after Mark has finished responding to -- Joe's laying out each issue. Mark is responding to those, and they are having back and forth. At the end of that, I think it would be good to ask the petitioners if they want clarification or if they have something to provide to the conversation, to add, right?

DR. FUORTES: Thank you.

MR. KATZ: Is that okay?

DR. FUORTES: Perfect.

MR. KATZ: Is that okay, Brad?

CHAIRMAN CLAWSON: Okay. I was just wondering if Mark was done with that, with his response.

Mark, I had one question. In the earlier years, you were talking about rad safety personnel and stuff like that. How many did Pantex have?

MR. ROLFES: Rad safety personnel?

CHAIRMAN CLAWSON: Yes, RadCon.

MR. ROLFES: Well, the very first couple of individuals that were in charge of radiation safety came from the Safety Department. And, really, in the 1952 through 1957/58 time period, there really wasn't any real concern over radioactive materials in process at the site. The exceptions were the radiography sources, the cesium and cobalt sources that they had onsite.

The individuals in the Safety Department were primarily concerned about high explosive safety, but they were also the same individuals that would correspond with the laboratories. In that time period, it was Los Alamos National Laboratory. They were the ones that would contact Los Alamos National

Laboratory to determine what radiological monitoring requirements were needed, and who should be monitored.

Really, when fissile materials began coming onsite in the late 50s/early 1960s, that is when we see more people involved in the safety program. Radiation monitoring requirements increased, the number of workers who were monitored increased.

I don't know if you would call someone a health physicist in those early days. They probably wore many hats, as I said, as safety professionals. But, really, that early time period, because 99 percent of their work at Pantex involved high-explosive production, assembly and subassembly, that was really what they were concerned about, is explosive safety.

CHAIRMAN CLAWSON: This is Brad Clawson speaking again.

If this is the two that we have talked to, until 1989, there was two of them

that monitored, and it was covering the RadCon issues on it.

One of the things that you brought up was the sampling, the air sampling data, and so forth like that. And yet, in the early years, according to the way the buildings were designed, they were more worried about what was going to get out of the building than actually what the workers were set up, if you look at where the air sampling data was set up on that.

That is something that we are trying to take a look at as a Work Group, and so forth like this, but this was brought forth to us because, in speaking with the rad personnel that were there -- and this comes back to what Joe said -- they were calling other sites to be able to figure out what they needed to be able to do with the issues, and so forth.

One thing I wanted to bring up is, when they started coming back on, any weapon

that came back in, and in the early years it was more prevalent than anything, when you retrofitted something with a modification, they were torn down and put back together. There were some issues in that.

So, it is not just dismantling, or whatever. There was a lot of retrofitting to be able to make them function better. I think we need to remember, in the early years, there was quite a bit of that that went on with the earlier ones before they were taken out of service.

MR. ROLFES: That's true; there are retrofits that were done historically. Just because there was a retrofit doesn't necessarily mean that a radioactive material was involved. Sometimes they might have put a parachute onto a bomb or changed the type of parachute that was used. Sometimes it was related to batteries, for example, being replaced.

Those types of things don't

generally get you into a situation where there would be contamination present, not the same as a full disassembly.

CHAIRMAN CLAWSON: And I understand that and the parachute part is nice, too, but also, as Nevada Test Site and these other sites learned more about it, they were going into the heart of it, and mainly the instrument part of this item and retrofitting them. That can get into little things.

DR. CHEW: Joe, I want to go back, in full respect to you, though, and Phil. Joe, let's talk about the DOE oversight. At Pantex, why Pantex is different from many of the sites that we all have been working on, what you call production and materials productions site, there are really three customers, as you all know. Pantex, basically, the customer was DOE. DOE had to accept the finished product, what they call a diamond standard, to accept it as the

deliverable from the customer.

But the other two customers were the national labs. The national labs were always very concerned that materials compatibility was a major issue. I think all of us know all these weapons stay in stockpile under a variety of different situations and conditions, moistures, altitude, temperatures, and they had to have survivability. I think you know where I am going with that, Joe, I think we've talked about this before.

So, any time that there was a low level of number of internal bioassays that are taken -- let's go back to what the real exposures were and how much quantity was exposure to give you a necessity to do the bioassay here.

So, therefore, let's talk about -- I'm not going to break down compounds, but I think you know, but there's uranium and then there's the fissile part of the uranium component and plutonium, and I think that is

all I want to really address.

So, when those materials compatibility issues show up as potential contamination, it was a major concern to the weapons design laboratory and eventually DOE, which is the customer. So, that is why you hear quite often we would go back to the labs and ask what would be necessary to do.

I know from personal experience, and I think Bob would attest to that, too, the customer who produced the components, whether it is going to be Rocky Flats -- and you know what part that would be, Y-12 and their components, and the labs all got together.

Not only there was what they called the safety program, but there was the nuclear explosive system safety requirements that had to be on top of, whether we consider the lab protection, the safety analysis portions. So, I think what I am just trying to say to you is that the minimal amount of bioassay really is testimony to the very fact

that the components were built to the certain specification, and survivability is one point.

Any time, again, they saw anything that was unusual, the laboratories, the customers themselves, would have to be -- have to be -- a requirement to be called and answer to address that issue because, again, of the transcompatibility and long life of the stockpile. I just wanted to set that tone, of why Pantex is really different.

But you, DOE, Joe, I want to say you, DOE, was a big customer.

MR. FITZGERALD: Well, now I understand that premise that this program was born squeaky clean. I think, though, that the reason we have this Act and the reason this Board is in place is to exercise a healthy skepticism that is born of experience. I, firsthand, have had the experience of auditing practically every DOE operation, including Livermore, your own operation.

And I found that the actual

practice, the reality of what was happening in the workplace didn't match with the procedures, didn't match with what management was claiming and workers were being exposed, and dosimetry programs -- I set up DOELAP in DOE 15 years ago. When we set that up, there was no uniform requirement that said, here are the bases you would have to touch in order to have an adequate dosimetry program. And that is when programs like Pantex got swept in because, essentially, you could get by.

If you have a prevailing assumption that is bought in by everybody, I mean one thing that I remember, you know, we are talking about 40-50 years ago. So, the people we interview are not people that are speaking necessarily firsthand. Okay? We are looking for records, but a lot of records have been destroyed at Pantex. A lot of the air sampling information, other information that we would like to look at, a lot of it is discarded. That happens at a number of sites.

But I am just saying that, you know, I think it is incumbent upon us to have a healthy skepticism about the fact that the reason there is event-driven bioassay is because, obviously, there was nothing to bioassay most times. I think that is a dangerous assumption to lead into an SEC evaluation.

I think, again, and I will make the point, I, frankly, want to validate whether the program that was in place, that was being documented as being in place, and the procedures that we are pointing to as having been used in the 60s, in fact, were practiced. I know it is a challenge because there's not a lot of people alive that can testify to that, but I think it is incumbent upon us to do that.

I think it is also incumbent upon us to recognize -- and I have a chart here I am going to hand around. This is -- Sarah, for your sake, this is in Rhetoric to Reality,

which is the report that Pantex did. This is unclassified.

But it has a great chart of all the weapons, nuclear weapons, warheads, systems that were handled at Pantex over the years. And you will find, very interestingly, the number of weapons systems in the 50s and 60s -- and, you know, this was the Cold War, obviously, the height of the Cold War, so you are coming up with all kinds of different applications out of howitzers and now landmines. Who knows? They were using nukes for just about everything.

And the point is, though, that, yes, there were a number of different facilities, but there was a heck of a lot of activity, a lot of assembly/disassembly, just a heck of a lot of activity, a lot of pressure on this plant to push the units out the door, just like with Rocky Flats, a lot of pressure.

This is a much different era than we are looking at now. So, it is hard to

imagine the kind of pressures that were involved.

But I think, given the feedback we have from some of the hands-on workers that actually worked in those earlier days, and there's a few around still from the 60s and 70s, I think we have to take that seriously, that there is some feedback that what was on paper isn't necessarily what was going on in those cells when you were assembling and disassembling in terms of contamination.

I mean, there's a number of questions that we have raised in the Site Profile report. This notion that all the radiological units, the pits were completely encased, and there just wasn't this kind of exposure source, I think we question that.

I think in the earlier design days, talking about, you know, you can ask Livermore, what's going on with Pantex, and the answer you are going to get is going to be on this side of the chart, the 80s, 90s, and

2000s. That is the historic time frame for anyone that is in the DOE or in the labs right now.

I mean they don't have any particularly more wisdom about the 50s than any of us do. That is where it becomes a challenge to find some reality checks through workers and documentation.

Now the documentation is not easy to come by. A lot of it is classified, and some of it has been destroyed. I mean, error monitoring data from the 50s and 60s isn't necessarily going to be on somebody's shelf or in somebody's safe. Some of that is no longer available.

So, I guess, again, my response, and my response to you, Mel, is that, no, I don't think this acceptance of this assumption should go without some scrutiny. We have to look at operations. Were, in fact, these components all sealed? There's some evidence that not all of them were sealed. There are

exposure pathways. There was oxidation.

Tritium, top 10 people, top 10 people when, 1990? -- I would say the top ten people in 1960 would be a much different top ten because the distribution would have been entirely different. Back in the earlier days, the reservoirs containing the tritium were engineered in such a way that the possibility of leakage and what not was higher.

I mean, you know, it makes sense. Technology and engineering advances, you learn from your experience, and the department, AEC and the labs learn from their experience and ruggedized the components so that there would not be releases, as many releases as you might have had in the earlier days.

So, are we going to take the distribution of tritium monitoring from 1990 and apply it to 1960, even though we know that the components were engineered differently and that the frequency of releases were different?

I don't see it. I just don't see it yet. That is an issue.

The notion of saying that the requirements that you would have followed in the 1960 incident or incidents thereafter are ones that we could take stock in, I am not ready to do that because, frankly, I have seen procedures and requirements in 1998 that were ignored by operational managers at DOE sites. It just happens. It is the reality.

I think people on this Work Group will attest to that, that what is in writing, what is required, what's the procedures -- you know, the reason we have Price-Anderson Act enforcement in the Department is because it literally had to go to an enforcement mechanism because it wasn't enough to have the Secretary of Energy insist on something. You had to have some means of providing enforcement capability.

So, a lot of this gets around to the fact that you can't take at face value

what is on paper, necessarily, and you can't accept the fact that we have a weapons program that was born pristine. The tolerance levels changed. What was tolerated by labs, I suspect, in 1960 was a lot different than what the labs would tolerate now. And why? Because we learn and we also tighten up requirements.

So, again, I am not providing the kind of evidence that I hope that we can gather that will bolster this perspective, but I think it is too much of a rush to judgment to suggest that this program is so clean that you never needed bioassay except in a rare instance where you happen to have a release.

I can only tell you that there was a great deal of concern in 90, 91, 92 over Pantex and the Radiation Control Program there. Everywhere from the Defense Board to the Department to the contractor, they focused on revamping that program.

So, calibrating practices in

dosimetry after that happened to practices in dosimetry before that period, I think, is a non-starter.

CHAIRMAN CLAWSON: This is Brad again.

You know, on every site and every Work Group that I have been into, we get into the 1985-to-1990 era and we see a drastic change with every site we deal with. That is mainly because of the DOELAP and basically getting down to we have one RadCon Program; we are all going to do it.

And this is historically, if you notice, Pantex was one of the last holdouts because of the difficulties, and the same difficulties that we are having today of getting information and also getting onto a site. Under national security, you know, I can understand that. But even from the RadCon techs, if you want to call them, or if they are official health physicists, or whatever that actually, in 1989, they had to shut their

whole program down because they didn't have enough people to cover it, period.

They went from two now to almost 90 in, I believe it was, well, when Battelle came in, it was like in a two-year time period to be able to start covering these issues, and so forth.

I think in the earlier years, remember, the aspect of this, it seems like everything -- and this is just my personal opinion -- that they were more worried about the high explosives that they were dealing with, and that they were doing these things with, than they were the actual components, and so forth, that came in.

But, you know, we could discuss this for hours on end, but I think it is also important for us to allow people like Sarah and Lar to be able to weigh-in on this, too. And Lar has already expressed a concern that he would like to be able to do it.

If you don't have any more, Mark

or Joe, I guess I would like to hear from the petitioner.

MR. ROLFES: Yes, that would be fine with me. Thanks, Brad.

CHAIRMAN CLAWSON: Okay.

MR. KATZ: Lar?

DR. FUORTES: Hi.

MS. RAY: If I could say something after Lar finishes?

DR. FUORTES: Sure.

CHAIRMAN CLAWSON: That would be fine, Sarah.

DR. FUORTES: Sorry. Did you say for me to go first?

MR. KATZ: Yes, go ahead, Lar.

DR. FUORTES: Okay. Well, thank you guys very much. I'm sorry to confuse the process.

But I think that several people from the Board and SC&A have iterated some of our concerns. I have to brush something, however.

Second to Sarah -- I and Sarah have spoken to many more elderly former workers from this facility than NIOSH has. And the impressions that we have gotten are, as the gentleman from the Board has indicated, they are truly different than those that I would get from reading NIOSH's documents.

In seeing NIOSH in practice, both at the Iowa Army Ammunition Plant and at this facility, the assumption of this being a clean facility with no risk is quite clear. I mean, they have actually stated that in public settings.

Coming with a priori bias, I think, is a very dangerous thing to do in a scientific situation. One should try always to assume ignorance and recognize that a state of ignorance is the best place to start from if you are trying to learn the truth.

That was not the case with NIOSH. To the extent that I really want the Board to recognize how NIOSH's process was affected not

just by this a priori bias that everything was done the way it should have been done, the reason there are no assays is because there was no exposure. Had there been exposure, there would have been assays. That assumption is certainly a possibility, but it doesn't strike me as true, given the history of occupational health and safety.

It also doesn't strike me as true, given the tone of the Tiger Team report. The tone of the Tiger Team report was that this facility was replete with shortcomings in how they handled worker health and safety and the environmental route of disposal. Monitoring, it was cited repeatedly, to the extent that, after the Tiger Team, their health and safety and radiation health teams increased by orders of magnitude.

NIOSH refused to entertain even reviewing this SEC petition repeatedly. I want the Board to be aware of this, that this SEC petition had to go to administrative

review because NIOSH's assumption was, there is nothing in the Tiger Team report or the worker histories that could change our mind that this was a clean facility.

So, they said that they were not going to allow the Board to see this, had this not gone to administrative review. I think that that is something that NIOSH will have to answer for, and it certainly decreases the credibility of -- both that and that a priori bias really decreases the credibility of NIOSH, unfortunately, in this situation.

As regards the workers' histories, I would like to just point out a couple of things. We heard from several Iowa Army Ammunition technicians who traveled back and forth from Burlington to Pantex that there were health and safety issues at both facilities.

For example, Jack Polson, the chief scientist at Burlington, told us and told NIOSH, I'm sorry, but there were

situations when pits were breached. And he would go no further. He would say, I will go on record, there were situations when pits were breached.

Ed Web, one of the older gentlemen who was interviewed at length from Burlington, described at length the maintenance of the Mark 6 weapon and the in-flight insertion weapons, where some metallic oxide was removed with some regularity with cotton swabs with no respirators, no monitoring. So, this appears to be uranium oxide, and, I would imagine, enriched uranium.

So, I would say that the assumption of zero exposure that NIOSH is building on is invalid. Then, again, as you have pointed out, the assumption that exposure information after the Tiger Team report, after the health and safety program was beefed up in the 1990s, that that information was relevant for making assumptions about exposure previously is certainly suspect.

The second worker history I would like to share with you from the Pantex workers that I think speaks to that is their description of beer holidays for tritium spills. They described this to us, independently, independent groups of workers. The first time you hear such a story, you assume that it is apocryphal and it is just a funny story. But after hearing it in different groups of workers, that they report tritium spills having been documented and those individuals being sent to the medical office and being sent home with a prescription to drink a case of beer and then come back to work, to dilute out a tritium spill without any monitoring, I think that that really speaks to there being some problems with recordkeeping in the facility. Either that or you just discount worker histories, and I am unable to do that, given the consistency of these histories.

That is all I have to say. Thank

you.

MR. KATZ: Thank you, Lar.

Sarah?

MS. RAY: I'm not a scientist at all, Joe.

First, I would like to review. He covered our issues in-depth. Again, like him, I have real problems applying today's operations through our time frame of 1951 to 1991 on our SEC petition. I would like to ask, if there was no radiation contamination, then why did we have a dosimetry program? Why was there worry about getting lead aprons, which we know were not generally used in the early years? Here you are talking about the fact that at a period of time there were multiple facilities that did assembly and disassembly.

In 1974, I was out there at Pantex. I'm familiar with the red phone, I'm familiar with the manufacturing, calendars, the daily change report that went daily to

Washington. I have seen many of the older weapons items that were coming in and going out. And yet, program numbers that I haven't seen listed in any of the information that NIOSH has presented that I know were coming in and going out.

I have always felt like NIOSH really has not really done a good review of documents at the plant, in part because they are not listening to workers.

Mark today is talking about continuing air monitoring. [identifying information redacted] is the person that is the RAM system for Pantex. If you ask him, he will tell you that the first continuous air monitors furnished in the 70s, it was more of a check. It wasn't something that was required. They were installed in 1226, and it was alpha monitors and they were sniffed in at approximately eye level. So, we know that that did a lot of good.

I don't think the three

individuals have even looked at 1226. They toured the training base up in 1215, and we are told that that is exactly what the line looks like. The diagrams, in the Rhetoric to Reality, there are diagrams of facilities that are in use today. The 1244 cells are nothing like the current cells. 1226, where most of the weapons work was done, is nothing like the bays that are pictured in the Rhetoric to Reality.

Another thing, ATKT limits are quite different today than they were in past years. It was not uncommon for workers to be surrounded by weapons just waiting to do whatever they were doing with them, 10 or 12 weapons at a time, full-up weapons. All of their weapons were much hotter. You know, you have to take that into consideration.

Individuals, many individuals, had custody of these weapons, and they were with them for hours at a time. I have heard many workers talk to me about -- they had custody,

it was time for lunch, and so they sat down on their tin cans and they ate their lunch.

These are not practices that you are going to see documented in procedures. These are things that come from workers. I think when you are not listening to workers, you are not getting the true story.

And I have a real issue with the fact that there was no rad safety. Basically, we have two people, and they are covering 24/7, 365 days a year. How can you tell me that someone can be there monitoring rad safety issues every day 365 days a year, 24 hours a day? That is humanly impossible.

And now they are up to 90. Why did this happen? It happened because of the Tiger Team report. Many things came about. The standardization of RadCon practices with the RadCon Manual, 1992-93, that was the first time there was anything standardized.

I have talked to workers who were lost in the bays through a tritium release.

Somebody accidentally found them. And several days later, someone decided to get a urine sample from them. Again, as Lar reported, they were told to drink a lot of beer. You know, these things are real.

At least one of these was in the Tiger Team report, being what I consider probably the classified version of the Tiger Team report. I don't have that. Mine is one that has been redacted.

So, even this particular issue, where people were lost in the bays after a tritium release is missing from the Tiger Team report. But the Tiger Team report is a very important document. It brought about many, many changes.

I guess that is all I have to say. I can think of many things, but I would like to make those comments.

MR. KATZ: Thank you, Sarah.

MR. ROLFES: This is Mark Rolfes. I just wanted to respond to both Lar and

Sarah.

Lar, I wanted to state that I did go to Pantex with an open mind to learn and with the intent to help workers at the site. I wanted to make sure that the technical basis that we are using for dose reconstructions were as complete as possible.

If you take a look on our website, we have NIOSH outreach activities for the Pantex plant. And we had our very first meeting down onsite with the Metal Trades Council back in June of 2004. And then, subsequently, we met with the Pantex plant guards union and Metal Trades Council, July 31st, 2007. Let's see, during the SEC evaluation time period, we had two meetings on January 29th, 2008.

Also, during that time period, I had made a couple of different trips to speak with workers onsite and offsite in various capacities as well. If you take a look at our history of Technical Basis Document changes,

we actually did go back and change our Technical Basis Documents based on worker input that we had received during those meetings.

So, I want to make sure that we do point out that we are listening. We are listening today also.

So, that is all. Thank you.

CHAIRMAN CLAWSON: I appreciate all your input.

Lar, I would like to make one comment to yours, though. I kind of found that interesting about drinking beer because we just returned from a Mound meeting and talking to the tritium specialists, and they said their key was to drink an awful lot of water all day long. So that I guess the term dilution is the solution kind of plays into part there.

We have discussed adequacy of internal records, but I guess what I need to know is where we need to proceed forward with

this. I believe in my view it is in NIOSH's court, actually.

MR. FITZGERALD: Well, let me offer this. I think it was a very well written preamble to report particularly folks that were internal. So, that is what I think we have been more or less discussing, the general prospect on internal.

I think it will be helpful for the worker to maybe walk down, not spend a lot of time, but some of the specific subparts of that, because there is such a large scope involved there on that one. I think we have just kind of looked at the generalized comment first, which is good. I think that is appropriate.

So, do you want to go specific?

CHAIRMAN CLAWSON: Yes, let's go specific then, and we will just work our way down.

Now, Sarah and Lar, we are starting out on item number 1 in the matrix,

just so you know where we are at.

MEMBER PRESLEY: Hey, Mark.

CHAIRMAN CLAWSON: Yes?

MEMBER PRESLEY: Before we start, can we take a break?

CHAIRMAN CLAWSON: Yes, that would be fine. Mark just got here, so, it is time to go on a break.

MR. KATZ: Yes. For the record, Mark Griffon has just joined us, from the Work Group.

CHAIRMAN CLAWSON: Would a 15-minute break be okay, then? Would that be long enough?

We will break for 15 minutes. We will return at 11:05.

(Whereupon, the above-entitled matter went off the record at 10:51 a.m. and resumed at 11:04 a.m.)

MR. KATZ: We are reconvening after a short break. This is the Pantex Work Group of the Advisory Board on Radiation and

Worker Health.

We have just gone through a discussion of -- at least a general discussion of issue 1, I believe.

MR. FITZGERALD: Well, it is the general part of issue 1.

CHAIRMAN CLAWSON: So, I guess we have not completed issue 1 yet. At this time, I guess I will turn it over to you, Joe.

MR. FITZGERALD: Yes, I am just going to highlight. We talked the general issues. So, I am just going to be very specific about it because, again, the internal dose issue is a very important, critical one, and it does have some subparts.

One subpart is for tritium. And that is also addressed a little later from a different standpoint, tritides. But for tritium, NIOSH claims that, while tritium leaks occurred, these were small and immediately identifiable, and that air monitors were used to minimize uptakes.

However, NIOSH also acknowledges, and we agree, that routine tritium bioassay monitoring did not begin until 1972. The basis for the backward extrapolation that is being proposed in the Evaluation Report from later tritium data to this earlier period is that the availability of, quote, more measurable intake potential would be claimant-favorable compared to the earlier period when few samples were available.

Now, undeniably, there is more data. It is useful to use more data if you are going to do extrapolation, but the concern, again, is, how representative is that newer data to be applied retroactively that far back? It is quite apart from how much more data you have. The real question is, should you do it? Is it something that sort of like begins a surrogate data question? This is substitute data. Can you, basically, use data from this later period and substitute it for data that you lack in that earlier

period?

From what we have said earlier, we don't believe that is the case. It is not necessarily that more data represents better data. I think the operations were different. I think the exposure pathways were likely different.

A lot of what we are going to pursue, I think, in our review, and we would invite that on NIOSH's part, too, is to basically look at the basis for that comparison. Can you apply that data irregardless of how much more you have of it, to this earlier period where you lack as much?

That is kind of our response on the tritium, without having actually gone and tried to interrogate what information we have there.

MR. ROLFES: Right now, Joe -- this is Mark Rolfes -- we certainly acknowledge that not all workers participated in a bioassay program, but we do have a strong

indication that, when there was an event which released radioactive materials, that the worker was bioassayed.

MR. FITZGERALD: You have a strong indication?

MR. ROLFES: We have a strong indication because, if you lose your materials, it becomes an incident. It is something that is important to the weapon.

If there was an exposure, as there was in 1989 when there was a tritium release, it prompted quite a bit of investigation. It was a very big deal.

MR. FITZGERALD: Well, take it back prior to 72.

MR. ROLFES: Okay.

MR. FITZGERALD: What would be your indication that that would have been done, in the 1970s, say?

MR. ROLFES: Well, when new reservoirs were received, the containers that they were contained in were placed into a

hood, and the atmosphere inside of the container was expressed into the hood. They had basically surveyed the air inside of that container.

It wasn't really until the mid-1970s, and these are for assemblies, the earlier time period that I am referring to in the 60s and 70s, when they are primarily focused on assembling, there's really not a significant potential for tritium exposure handling a reservoir that is just shipped from the Savannah River site, for example.

MR. FITZGERALD: What's that based on, though? I am just trying to figure out, and I am not saying this in a pejorative sense. You have a lot of confidence in the integrity of the reservoirs as well as the handling operations back in pre-1972, such that you are willing to extrapolate back to that period and assign current values, 1990s values. So, you have a lot of confidence.

I just want to understand where

that confidence comes from, what it is based on. Is it documentation, interviews with people that were contemporary to that period? I just want to get a handle on why so much confidence.

MR. ROLFES: I guess it just comes with speaking with workers for the past -- I have been involved with Pantex for the past five years and have been traveling and speaking with people in the Radiation Safety Department, people that are production technicians involved in assembly and disassembly, people at Lawrence Livermore National Laboratory, for example, and Sandia as well.

You really don't have a significant potential for exposure to a brand-new reservoir that is sent to be assembled into a weapon. You are really not concerned about any contamination of significance until you disassemble that weapon. That is when, you know, if the reservoir has been in the

field for a while, the tritium can begin to migrate through welds on the reservoir and things, and you can begin to detect contamination on that reservoir.

It is really not until many of the weapons were disassembled in the mid-70s forward when there was a true exposure potential for tritium.

MR. FITZGERALD: But this is important because I think in terms of guiding our inquiry and yours, were these individuals that were operators from that time period that actually were hands-on? Or were these health physicists and managers that were sharing recollections?

Because, again, as I pointed out earlier, we are talking 40 years ago. And the recollections and the type of perspectives that we are looking for are ones that are firsthand. That gets harder and harder to get.

MR. ROLFES: Right.

MR. FITZGERALD: So, I am just wondering, what is the basis for saying this is so?

MR. ROLFES: Some of the first couple of people that we spoke with on the site had begun employment in 1952 and 1953, respectively. We have spoken with people that have been there since the late 1950s all the way up through, you know, just being hired and at the site. So, we have tried to capture as broad a range as possible and speak with anyone and everyone we could imagine might have some connection to the Radiation Safety Program.

So, we didn't focus on solely managers or solely production technicians. We tried to get as broad, as diverse as possible of a group of people that were involved, from day-to-day operations in the cells to people at the firing sites to office workers. I mean, guards.

We have heard many different

stories and many different situations. We have tried to do our best. We have tried to do our homework.

I can say that I have been down there probably 10 times, and I know our contractors have gone down to the site as well to investigate several different issues. If someone says, well, there was a uranium exposure that occurred here, we take a look. And if we don't have records that cover that, we go back to the site and ask.

There's occasions where we have made several calls just to say, hey, are you aware of this situation that occurred back in 1978 or something.

I think we have done our homework. This process, as we all know, is a learning process. We still don't know everything. So, we want the answers. We want the truth, too. We want to make sure that we are doing the right thing for the workers and trying to make sure that we are truly being claimant-

favorable and giving the benefit of the doubt to the workers.

So, I think that what we have in our Technical Basis Document here, the tritium exposures that you are referring to -- in table 5.6 of our Site Profile, we have -- let me pull it up here, if I can. It might take me a minute. But we do have tritium exposures by year in the Technical Basis Document that we use.

So, if an individual indicates that he was exposed --

MR. FITZGERALD: That is post-72 though? Because there were no measurements before 72, as far as I know.

MR. ROLFES: Right, right. There were no routine measurements.

MR. FITZGERALD: Right.

MR. ROLFES: There were some measurements, but, as I had mentioned, there could be high detection sensitivities.

MR. FITZGERALD: While you are

looking at that, though, it is fair to say, then, that the hard place we stand upon right now is that there is no data other than maybe some event-driven tritium measurements pre-72, and that applying the data -- I think it is what, 1990, am I right? It is the early 90s tritium information. Applying that distribution to pre-72 is based on your sense, collective sense, of having talked to various workers, a cross-section of workers, that things were equally tight in that time period as after that time period? I mean, is that fair to say?

MR. ROLFES: Yes, that certainly is. I also wanted to add another caveat, I guess, that the people that received components onsite and were involved in handling reservoirs, it was only a couple of people that actually did that work.

For example, if you have x number being sent in, x number were received by one or two individuals, and the atmospheres inside

of the containers were checked to make sure that it wasn't leaking or it wasn't leaking in excess of what was established at the time.

And that individual that was doing that work would have been the one with the likely highest potential for exposure, just because he was the only one that was handling that quantity of material. The other individuals, the other production technicians that were handling those components, it would have been divided. You know, not one PT would have handled all the reservoirs that came onto his site. It would have been divided up by several individuals working, and not all at once as well.

MR. FITZGERALD: But the reasoning -- and I think this is helpful for clarification for the Work Group -- the reasoning for applying the data-rich time period for tritium, which was the later time period, versus the distribution of the tritium data, starting in 72 was just, again, because

there was just more of it?

MR. ROLFES: Well, from 1972 forward, there is certainly more. That also corresponds with the number of disassemblies and exposure potential, so --

MR. FITZGERALD: But I am just saying, you are not applying the entire distribution? You are applying where the data is most plentiful, which I think, as I recall, was, there is a period of time in the 1990s or 1990?

MR. ROLFES: Well, what we have, then, in our Site Profile, in table 5.6, it is tritium uptakes for unmonitored workers. And it lists years on the left-hand side from 1956 through 1971. It lumps those all together, and it says to default to assign 24 millirem of tritium dose to the workers. Then, from 1972 through 2003, it breaks down individual years. And for the entire table, we also have maximum uptakes, average worker tritium dose, and average uptake. And there are some

attributions in here and some footnotes that explain the bases.

And let's see, if you take a look, for the years of 1956 through 1971, the maximum recorded individual tritium dose in millirem is from table 5.3, and the 24 millirem -- excuse me -- was an assumed value based on twice the highest values in the 1970s. And there's also an attribution to discuss the basis for that at the end of the Technical Basis Document.

MR. FITZGERALD: Again, the basis, as you are saying, is feedback from workers that were contemporaneous with this time period?

MR. ROLFES: Let's see, the basis here, let's see --

MR. FITZGERALD: Because, really, I'm just driving it, without putting too fine a point on it, again, this is sort of a sense of back-extrapolating where you have more data to where you don't have as much data. And I

just want to understand better why that is okay.

MR. ROLFES: Okay.

MR. FITZGERALD: I think what you are saying is you have a level of confidence based on feedback from a cross-section of people, some of whom actually were in that time frame?

MR. ROLFES: Right. I will read the basis for it. It says -- it is attribution number 33 -- and from May of 2004, it says, the factor of two was a professional judgment made to be favorable to claimants. As explained in the text, the risk of tritium intake was less during assembly than disassembly, and fewer disassemblies took place from 1956 to 1972 than afterward.

MR. FITZGERALD: Yes, but I would raise the question which I raised earlier. It is not just simply numbers of disassemblies; it is what you are disassembling. Certainly, weapons designs changed over time. So, I

would put a big asterisk on that that says before -- you would have to normalize that in terms of exposure potential, given the particular constituency in the weapon and the exposure pathways involved.

I still believe, and I think we need to demonstrate for the Work Group, that your earlier designs -- you know, I go back to this chart. That is a lot of designs in the 50s and 60s into the 70s, a lot more than later. We learn from experience, obviously, and the complex did. It got tighter. It got better-engineered.

You didn't have perhaps as many scurrilous exposures, and that's good, but I think it is fraught with peril to just compare based on numbers of disassemblies and assume that that is enough. I think you have to look at exposure potential, given what you are disassembling and, also, the practices that were in place.

Again, I think, in response to

Mel's comment, the tolerance levels back in the early days, in the throes of the Cold War when you are pushing production, were a lot different, I would contend, than after you had been hit all over the head by the Defense Board and you are post-Cold War in the 90s, a much different environment.

The fact you had one or two health physicists as opposed to 90, I would claim, also had an effect on implementation of the requirement. So, you know, I --

DR. CHEW: Let me make a comment about the chart here. Okay?

MR. FITZGERALD: Yes.

DR. CHEW: Just to say for the record, I know you show very good charts that show the number of units that were put together and the types of systems in the early days at Pantex. Yes, you are absolutely correct, the design did change, and the different components changed.

When you really look carefully, if

you look at the table and that chart, the sizes of the components also changed, too, because of the requirements of the military. Therefore, the reservoir designs changed.

I think we would need to be in a different environment other than this environment to discuss that detail.

MR. FITZGERALD: Right, but I'm just making the point that --

DR. CHEW: So, the exposure potential actually changed from our perspective.

MR. FITZGERALD: Right. But I would say that what plagues me the most about the approach that we are dealing with is that there's this going-in presumption that there is enough of a steady state that you can back-extrapolate a lot of the data from later time periods to earlier time periods to make up for the lack of data in those earlier time periods.

I am just, as a cautionary note,

saying, no, I think there was a lot of variables involved. I don't think it was steady state. And, yes, a lot of this discussion would have to go behind closed doors, but I think that is the cautionary note about with one fell swoop making that fundamental assumption.

A lot of the specifics we can get into really come back to that, that, yes, there wasn't much in the way of data and you have to accept a going-in bias or presumption that you had a very, very tight operation, it worked like clockwork in terms of event-driven bioassays, and that you can use the latter day data and back-extrapolate it because they did what they said they would do back in the 60s and 70s, and you can get away with that.

I think all those hypotheses have not been demonstrated. I think it is helpful to talk to people and get input, but I would qualify that by saying it depends on who you are talking to because I -- a lot of mythology

exists, I think, in the department weapons complex. Things are accepted and carried forward in time.

I would want to really validate some of these claims and understand why someone is saying what they are saying. Did they have firsthand knowledge? Were they on the ground in the operations? Or were they an HP that was sitting in an office who had requirements but didn't get into the work floor very much? And we have countervailing comments by the workers who actually did that who said, you know, it's not so.

I think that is the part where a healthy skepticism going into this -- and we're kind of at Day One on this SEC. I mean we have had the Site Profile review, the matrix, but we haven't dug into this. I am just saying that, for both NIOSH, ORAU, and SC&A, and the Work Group, I think we have to go in and figure out if, in fact, this steady state, this presumption of controls and

whatnot holds up with whatever evidence can be found.

I don't want to sort of go in as a precondition of accepting those premises. I think there's frustration on the petitioner's standpoint as well, that I think we need to go in with a blank slate and say, let the chips fall where they may and the operational staff may say one thing, but they weren't there 30 to 40 years ago. Even though they have a clean operation now, it could have been much different 40 years ago.

That is kind of my point on this thing here, that the top ten on tritium I would conjecture would probably be different than the top ten back in 1968. But I would want to get some more data on that, but I would be surprised if it were exactly the same.

DR. CHEW: We should pick up that discussion.

MR. FITZGERALD: Yes, okay.

DR. CHEW: So, that is a fair comment.

MR. ROLFES: Sure. Sure, it is.

Just to sort of give you an understanding about how dose reconstructions are completed, if an individual during that time period indicates that they did not ever have a tritium bioassay but were exposed to tritium, we do feel that assigning that tritium dose to them every year, which is currently in our Technical Basis Document, we feel that that is a claimant-favorable end result. We haven't seen any basis to indicate that it isn't.

So, if you are aware of something, we would certainly be interested in that.

MR. FITZGERALD: I would only say I don't know if a factor of two does it or a factor of four. I don't think you really know, either. I think what we are saying is that, since there is no real good sense of the uncertainty involved because we don't have

much data to go with, pick any factor. I mean that is what I am saying. It doesn't give me any comfort to say that we think a factor of two would be conservative because we assume the operations were buttoned-down back then and that there weren't that many leaks. I think the issue deserves more than that.

I think we need to find out, you know, is that an upper bound or, as it turns out, maybe that is a lower bound. Who knows? I mean maybe it is a factor of five or a factor of ten.

This is the same issue I had with the air sampling assumptions. There's a factor of ten that is being offered up as certainly a conservative approach, but I don't know. Based on the interviews and looking at the investigation reports of Pantex and the location of the CAMs, the CAMs weren't often located -- and this is not unusual in some places -- the CAMs weren't necessarily located close to the breathing zone of the workers. I

think it is arguable whether or not even a factor of ten would be sufficient to bound what they may have been exposed to.

So, I think these judgments as to what the adjustment factors ought to be, two, ten, five, I think those that have to be rooted in something more than just plucking it out as this is so conservative no one would disagree. I think it has to be rooted in an examination of the operations and some grounding in facts. I just don't see that. I just see a lot of -- we assume upfront that things were clean. Therefore, a factor of two or a factor of ten makes sense. Well, I don't buy the assumption, so the factors don't really resonate with me right now.

I think I need to know more. I always say that, again, because I think this group has the responsibility to go in and actually examine what the objective basis for this thing is, that everyone says it was pristine and clean. Let's establish that that

is the case going back in time. Maybe it was pristine and clean back to 1990, but before that it wasn't. How do you actually do that objectively and come up with an approach where people are getting credit for programs that weren't implemented as effectively as they needed to be?

MEMBER GRIFFON: Well, just to that end -- Mark Griffon -- to that end, where we take this from here is a question. I am curious, I mean you said you had a lot of interviews with HPs, operators, and all types of folks --

MR. ROLFES: Right.

MEMBER GRIFFON: -- regarding the weight of the evidence for that early period, that it was clean and buttoned up, as Joe suggests.

Are those on the O: drive? Are those something that SC&A then can possibly follow up with some of those individuals?

MR. ROLFES: Yes. All of our

worker interview notes will be interview notes that are on our website. I think right before you had walked into the room, I had mentioned four worker outreach meetings that we had offsite with Pantex workers. I think the Pantex guards' union and the Metal Trades Council were present. We had actually worked with the Metal Trades Council individuals and people from Human Resources at Pantex to identify workers who actually were involved in the hands-on operations. We had also spoken with people in the Radiation Safety Department and asked who would be knowledgeable of some of the early radiation protection practices.

So, we have gone to many different sources and also have flagged claimants. For example, we have seen claimants that have identified this individual knows a little bit more about this incident. So, we have spoken to other people in those cases.

MEMBER GRIFFON: Are those individual interviews captured?

MR. ROLFES: Yes.

MEMBER GRIFFON: You said the worker outreach.

MR. ROLFES: Well, for every claim, for example, we receive from the Department of Labor, we interview that individual in a Computer-Assisted Telephone Interview. In addition to that --

MEMBER GRIFFON: Yes, but I don't think you ask anything about the program in the early years in the CATI.

MR. ROLFES: No, we might not have something that specific in there.

MEMBER GRIFFON: Well, maybe it would be helpful, because I mean I know you have done worker outreach meetings and I know you have the CATIs.

MR. ROLFES: Well, Mark --

MEMBER GRIFFON: But it seems to me you are asking about interviews. Oftentimes, you have provided minutes of these interviews, like, for example, I mean Roger

Falk, others, that were experts for certain sites. Those are usually on the O: drive. I can't find right now the --

CHAIRMAN CLAWSON: Well, that is the point that I was going to bring up, and we were going to discuss this a little bit later. I have been throughout everything I can find on Pantex and I still cannot find the workers' notes in here. So, that may be something that -- you know, I haven't been able to find those.

MR. ROLFES: I can consolidate those for you, if that would be helpful to you or point out the Site Research Database document number.

CHAIRMAN CLAWSON: That would help an awful lot because this is --

MR. FITZGERALD: I was going to suggest one other thing. Because there is such a wealth of -- you know, Mark is correct, he has been interviewing since 2004, at least through the outreach meetings. It might be

useful just to consolidate on some of these issues.

Again, if the basis for the assumptions on the internal dose, whether it is tritium control practices or whatever, if it can be highlighted, this body of interviews is the basis for the confidence level on how that was handled. That would kind of winnow it down a little bit. Because, otherwise, I think you are going to be plowing through a heck of a lot of documentation. If you can highlight what, in particular, is relevant to the basis for this thing, then that would be helpful.

MR. ROLFES: There's a lot of information that is relevant.

MR. FITZGERALD: Well, with the interviews anyway.

MEMBER BEACH: Shouldn't those be in the Worker Outreach Tracking Database also? Jim might know that.

MR. ROLFES: Well, these

interviews were largely conducted prior to the worker interview database that you are referring to. I think that was just established within the past year.

MEMBER BEACH: So, they haven't gone back --

DR. NETON: But my sense is that Worker Outreach Database is really more group discussions and such.

MR. HINNEFELD: This is Stu Hinnefeld.

I don't think there are any individual interviews in that database. I think that's notes from the group discussion.

MEMBER BEACH: Well, he just mentioned worker outreach meetings, and I assumed that they would be --

DR. NETON: Well, worker outreach meetings should, those interviews preceded this database.

MR. ROLFES: Right and also the worker outreach meetings that have been held

with Pantex offsite for this project are on our website right now. There's four transcripts which are there. I think I mentioned the earliest one was in May of 2004, and there was one in 2007, and then a couple in 2008.

MEMBER BEACH: So, you will you send us a link to them?

MR. ROLFES: Yes, sure. Sure.

MEMBER BEACH: Or at least the FRB numbers, so we can find them easily?

MR. ROLFES: Yes, I certainly can.

MEMBER BEACH: Okay. That would be great. Thank you.

DR. BUCHANAN: This is Ron from SC&A.

Mark, would you summarize, then, saying that your personal interviews with the workers that actually worked on the floor, dating back to, say, the 60s, that they said that the conditions were very clean, and that there wasn't contamination or problems in the

personal interviews you did with the workers?

MR. ROLFES: I would have to take a look back at the interviews notes to determine whether or not, because there were some exceptions. One of the big incidents that I had mentioned earlier was in 1961, and that was one of the big exceptions where there was a plutonium release in one of the cells. That was certainly something completely different from routine operations, and it warranted an investigation and decontamination. Individuals were bioassayed.

That was certainly a focus of many workers' attention from that time period. They were certainly concerned about that event. So, yes, they did express concerns about contamination that were out of the ordinary.

Another example that had occurred was in one of the igloos where they had basically some nuclear weapons accident residues that were pulled out of a CONEX

underground storage cylinder. Basically, they had opened up this container and basically had some barrels of waste, but it had rained the previous night, got the barrels wet. They had surveyed the barrels down near the technical contamination and transferred them to an area for staging and repackaging to ship offsite, I believe.

And when they had returned to the area where the materials were stored into the igloo, they found contamination. So, at that point, it became an incident. They hadn't detected any output contamination when they initially pulled them out of the ground because it was wet. The barrels were wet.

So, anyway, I think that was when Joe was referring to an individual being lung-counted because there was an individual who had entered the igloo and didn't realize that there was any loose contamination. He had actually seen something on the floor and went in and apparently tried to clean it up. He

was subsequently identified when they determined it was radiological contamination. So, that individual was sent to Los Alamos National Laboratory to determine if he had any plutonium or americium in his lungs.

Once again, they developed a decontamination plan for that incident and actually issued -- the individuals were participants in a bioassay program at that time. They had actually issued like a certificate to the workers who had gone in and had been involved in the decontamination of the cell.

So, I have heard about many, many incidents and things like that. I believe that we've got a good handle on all the incidents, the major incidents, that contributed to potential worker intakes.

I hear good things and bad things, and I treat them -- you know, I want to make sure that we are accounting for the radioactive materials to which a worker is

exposed and make sure that, if there isn't data available for that specific individual, I try to find out why and if there should be. That is when coworker intakes or coworker doses come along.

DR. BUCHANAN: Okay, but did the workers actually state, other than the events, did the workers actually state that, yes, generally, it was clean; we weren't aware of any contamination problems other than the events? Did any of them testify to that concept?

MR. ROLFES: I would have to take a look back. There's been so many interviews that we have conducted. You know, it depends. Some of the workers have expressed concern about non-radiological contaminants, such as beryllium, about high explosives. So, there's many different things. There's not just radiological contamination that they were concerned about.

There were various other materials

that were of concern from the laboratory onsite could have been concerned about some organic compound. They were concerned about phosphates, organic compounds in fertilizers, in pesticides. So, I have heard a very wide range of concerns. We have to make sure that we are asking about the same types of contaminants and the same types of concerns. We need to make sure that it pertains to radiation exposures or contamination from radiological components.

CHAIRMAN CLAWSON: I want to make a point, too, especially with my Work Group meeting, I would like each side, because what I type up as their action items does not usually end up what they remember it as. So, I would like SC&A to be able, if they have an action item that they need to be able to do, if I could have you keep a list of anything that you have done for that.

Mel, or whatever, just so that when we get to the end of this day that we can

kind of read back on those to make sure that we have the right action items for each one of our groups to be able to do.

One of them right upfront with NIOSH is we would like to be able to see where the worker interview data is because I'll be right honest with you, I have scoured through that and I still cannot find them. Either I need the SRD, the database number, or so forth, so that we can be able to review these workers' interviews and if they are all in just that one database.

MEMBER GRIFFON: Maybe if they can be posted in a subdirectory in the document review --

MR. ROLFES: Right, right.

MEMBER GRIFFON: And it's interviews. Don't just lump them in with all the other research documents because, then, it will be easier for us to find.

MR. ROLFES: Yes, we can quickly overwhelm you, I'm sure.

MEMBER GRIFFON: I know, yes, right.

CHAIRMAN CLAWSON: Okay. So, we have discussed tritium. One thing I would like to say about tritium is in our interviews we had at the training bays I questioned, because of my background with Savannah River, talking about reservoirs, what they did. The majority of the workforce told me, we call the experts. We don't deal with that. We deal with these things. We call Savannah River or these other places if we have an issue arise with these.

And if I remember right, in the 70s is when Savannah River found some problems with the reservoirs. The wells, and so forth, is what you were talking about, the problems that they had in there.

That is where I believe it raised its head was down to Pantex. I am trying to figure out how much I can actually say about that. That is one of the things while that

era there was kind of interesting to me about the tritium, and so forth, because most of the workforce down there really didn't -- if we have an issue about it or we have a question about it, we call the experts. We don't mess with it.

I come to find out that they really didn't have a good understanding of what they really had. I am just being brutally honest here. They were told this, but they did not know it, or anything else like that. I have asked them point blank, what do you do if you have an issue like that? And they say, well, we call Savannah River and they send somebody down to take care of us.

MR. ROLFES: Brad, is what you are referring to maybe the 1989 incident where they had the big tritium release?

CHAIRMAN CLAWSON: Actually, what it was was that they come to find out that the tritium was penetrating through the

reservoirs.

MR. ROLFES: Okay. Okay.

CHAIRMAN CLAWSON: And it showed itself at Pantex. It had never occurred with that, and that is when Savannah River started doing the research. That is what they came up with. What they started to find out was how far the tritium was penetrating through the different materials, and the different materials that they had had for tritium reservoirs, and so forth like that. That is what raised, was at Pantex.

But Savannah River, being the experts with it, are the ones that went through it and so forth. One of the things that I find is that Pantex had a certain job to do. They were to do these things. On numerous occasions, and we have heard it from numerous interviews and so forth, all they knew is that this part went here, this, and this, and this. They really did not have a good understanding, not due to -- a lot of it

was classification stuff, but they didn't know what they were dealing with. They knew the component and so forth like that, and they went from there. As far as the tritium, and so forth, that is all they knew about it.

DR. CHEW: What is the fundamental question, though? I understand what you said.

CHAIRMAN CLAWSON: In the 70s is when this started to raise itself. We are talking 1972, now we have data here with this. It was in the earlier years that they started seeing problems with some of the tritium in the late 60s or something like that.

So, that was my understanding. So, my statement is that I think we need to have a better understanding of what we actually had there with it, and I don't think just doubling it and going back -- I guess I would be looking more for a stance of what you are standing on.

DR. CHEW: Brad, I will just make a short comment. I guess we could possibly

separate -- what you are talking about is the design issue here, and we've got to lead it to whether it was an exposure issue here, so from that particular issue. So, we have got to link that, too. We can talk all about the design, but that is the exposure --

CHAIRMAN CLAWSON: Right, but the design change came from a release, a problem that they saw. That's where I was getting to with it.

MR. FITZGERALD: And certainly one line of inquiry beyond the design issue is just simply there was an SOP where, if you had a CAM alarm for tritium, workers would evacuate the cell. A basic question with these four groups, then, in fact, bioassay or not, I mean that part of it I am not clear.

Certainly the exposure potential existed with the CAM alarm going off in a cell, but the question is, then, were all workers present bioassayed or not? I don't know if that is answerable with the data that

is still available, but that would be something that would help validate, I think, the things that we are talking about that the program was operating pretty rigorously.

MR. ROLFES: I can say that not all workers were bioassayed when a CAM alarm went off because one of the first things that would occur would be like a program engineer or a safety representative would response to the cell when the CAM alarm alarms.

Usually, what was done, they would investigate the work area to see if there was an actual release, et cetera. Sometimes it was just a faulty alarm. They were set to be sensitive and sort of err on the side of being conservative to detect any release.

But there were certainly situations where a worker would not have been bioassayed following a CAM alarm, just because a lot of the times they are false-positive results or potentially a result of an elevated rate on concentration in a cell.

CHAIRMAN CLAWSON: Do we know what the set points were on those CAMs?

MR. ROLFES: Off the top of my head, I know we have it, but off the top of my head, I don't recall what. Do you happen to know, Mel?

DR. CHEW: There were several instruments being used. I don't want to say the number. I think we talked about this before. In the T-290, there was more of a local unit, and then there were boxes that were developed for putting a stationary unit. Then, they converted over to the T-446. But they were usually set to see, you know, 1 times 10 at the working level for tritium. You assume there's water at about 5 to 10 microcuries per cubic meter.

So, to answer your question, the T-290s were set different than the --

CHAIRMAN CLAWSON: Okay. I just wondered if they had set points because, in talking with some of the former workers and so

forth like that, they did say that they had radon issues and so forth like that. So, that a lot of times if they kept alarming and stuff like that, that they just bumped them up.

And I was wondering if they had a strict procedure of how they would bump that up or what they would actually set that to because in the earlier years the radon was affected more, is my understanding. I wasn't there, but just from what they have told us, that it was more affected.

DR. CHEW: To answer your question specifically, the set points are different for the different instruments they were using and for a different purpose. So, I could not give you one answer.

CHAIRMAN CLAWSON: Okay. I wonder if we have looked into that because I know that, like we are saying though, we are talking today that they have a certain set point for these that they ran at, and maybe we need to be able to look into that and make

sure that they didn't have a set procedure for that.

MR. ROLFES: There is a procedure that I recall for the RAMs unit, and I believe we have it here somewhere in the Site Research Database. I can identify that also.

CHAIRMAN CLAWSON: That's for the RAMs?

MR. FITZGERALD: But I think what you are saying is that you would need to adjust for the technology and the set point and some of these other variables if you are going to apply data for that period.

CHAIRMAN CLAWSON: Yes, we have trouble with different times of the year. They have to change our set points to be able to address that.

MR. ROLFES: Yes. Now, in addition, also, after a CAM had run, it would monitor the concentration of alpha emitters in air. Now it would also be pulled, that filter would be pulled out of the unit. I can't

recall if it was on a monthly basis. They would actually analyze it, again, in a low-level counter to see if there was any contaminants that were not detected in the routine air sampling program.

I don't recall if it was like a proportional counter that they had used separately to do like a low background count on the filters after they had also been run for a month.

So, it was monitoring real-time, and then, also, monthly when they pulled the filter or changed the filter.

DR. CHEW: Not to be confused, so we understand this, there were the tritium monitors, and then there were the ones that Mark is talking about that were basically looking for output. So, there's different kind of instrumentation.

CHAIRMAN CLAWSON: So, they weren't using the same one for the same monitoring then? Were they using the CAMs or

there's two different --

DR. CHEW: There's two different type of systems. One is they are looking for the gas from the tritium, and the other one is looking for particulates.

CHAIRMAN CLAWSON: Okay.

DR. CHEW: Entirely different.

MR. FITZGERALD: Just a followup, because I think this notion of using the air monitoring data, and there was a statistical analysis for cell 4. I think that was presented at one of the -- I guess I am still troubled by whether the monitoring technology, the set points, you know, some of the issues relative to what was responded to, what was the monitoring done in the early days, is such that, you know, the statistical analysis sort of looks at whether the numbers are statistically valid, but I am looking at whether the technology that produced the numbers is, in fact, adjusted for when you are using this data today.

And I didn't see that. I don't know to what extent that was looked at, but, certainly, it broaches a number of questions. Were the CAMs, in fact, sensitive enough to have seen a level of exposure that would be pertinent to dose reconstruction? Is that going to be consistent with whatever coworker model is used? In terms of applying data backwards, we are going to get into that with uranium, but if you are going to rely on air sampling data, then have you actually normalized against the technology that was used? And does that affect the results that we have or not?

I didn't see that in the ER, and maybe it wasn't the right place for it, but that certainly would be something that you are raising and is relevant. Is the monitoring, air sample monitoring, and what have you, different? I think all of us would agree that the technology was different back then, but what's the implications for doing what is

being proposed in the ER, you know, that you can actually take the data that came from that monitoring and use it in some fashion? Even applying a statistical test to it, I would still say, what is the effect of the older monitoring that was done, the technology being 1960s technology for looking at tritium, and 1960s alpha monitoring capability, and what's the difference? Does it matter what's the uncertainties involved in the equipment? Does it have any implications?

That's not addressed, and I think where you are looking at air sampling information, I think that is one of the questions that has to be asked. Does it have an implication for what you are proposing?

MR. ROLFES: Just to clarify a little bit, we didn't use those air sampling results from the cells as the basis for our dose reconstruction method. We actually have something -- we assign intakes which exceed by an order of magnitude or more the intakes

which would be based on air sampling.

We've got a different method in our TBD. If you look at table 5-19, it has summary default intakes. These were also based upon worker interviews that were conducted on the site.

For example, for a production technician or a radiation safety technologist or an assembler/disassembler individual from the period of 1961 through 1993, we would assume a chronic exposure to tritium, depleted uranium. Let's see, both via inhalation and ingestion and assume the most claimant-favorable solubility of the materials which they --

MR. FITZGERALD: But I'm really speaking to the default values for whether it is depleted uranium or something else, where your default values are based on a comparison of the early period, say the 70s, with the later period, the 80s, in order to come up with, and you have done a statistical

analysis. You have based it on cell 4, one set of data.

The only question I am raising is that I understand where you are going. You are going to the air sampling information as a default when you don't have the bioassay, but it raises questions about whether the monitoring is comparable one for one. I don't see that addressed as far as whether you can actually do that.

And let me give you the specific cite because I am looking at this thing. NIOSH further analyzed alpha air concentration data collected for certain time periods and concluded that the concentrations in the 1970s were statistically lower than those measured in the 1980s, particularly for cell 4, which supports the choice of a default chronic intake value for depleted uranium. That is taken from the ER and also from the response.

Again, I think I understand why the analysis was done, but I don't quite see

how that comparison can be done without putting that to bed, that the technology is normalized, that you had the same thresholds and what have you.

It is just a question. I mean it is sort of, whenever we get to the air sampling information, I think you really are perhaps on shakier ground using the early air sampling data without wrestling with the questions about what were the thresholds of detectability, what were the set points, and the rest of it?

MEMBER BEACH: Well, and placement, also.

MR. FITZGERALD: And placement, which is something we mentioned earlier. I mean, if it is out in the hallway and you are talking about a release within the cell, the question would be, what is that monitor seeing versus what was present in the breathing zone of the worker in the cell, those kinds of obvious questions.

Certainly, that was a major feedback from the workers we interviewed, that when we mentioned some of these air monitors, they said, well, you know, we're not pretty confident because we knew where the air monitors were. They were way over here, and before the air monitor would have seen anything, we would have been exposed. So, it was a big difference.

And we had them diagram in the interviews where was the placement. So, you have some obvious questions about whether that was, in fact, representative or not.

MR. ROLFES: Right. And typically, when there was a CAM alarm it was investigated, I certainly acknowledge that it would take more time. You know, a worker could be working right here, and the CAM alarm might not alarm, you know, 10 feet away on the wall. That is certainly very possible.

But if there is enough contamination, it will eventually alarm since

it is a ventilated area. And in those cases where the CAM alarm did alarm, it required a response from someone from the Safety Department to come and investigate. Sometimes there were nasal swipes taken, other times there were not. Sometimes the individual provided a urine sample, and sometimes they did not.

We have looked at the occurrences. Also, we have also seen situations where they would take surveys of the cells to determine how much contamination was released or where it was, what it was. We have seen documentation of contaminants being released and surveys of like tooling, various items in a cell, and personnel as well.

Even if we don't have a bioassay from those individuals, we can still use -- you know, if there is a clothing contamination -- amount of contamination on an individual's face or something perhaps, we can still use that information to generate an intake and

also flag that individual as having a potential for exposure, and truly having an exposure.

But I'm unaware of any situation, other than documented significant incidents where we have some large contamination event, that we haven't accounted for in our Site Profile or aren't aware of in our Evaluation Report or the records that we have.

So, we have quite a large database. Like I said, we have made several trips to work with the workers down at Pantex, to go to various record centers on multiple occasions to review records.

You know, we still don't know it all. We never will. But I think we have a demonstrable case that we are assigning bounding, claimant-favorable intakes and radiation exposures to workers historically.

Now we will whatever we can to show the data that we have to formulate these bases. We will do everything that we can to

explain our basis and justify. And if it turns out that we don't have a sound basis, that is fine.

MR. FITZGERALD: Well, I think, just picking something, let's just pick depleted uranium as an example, since we are in this in the realm of internal. Depleted uranium was used fairly routinely through the operating history.

MR. ROLFES: Right.

MR. FITZGERALD: I mean it is certainly not like -- you know, it was used. And depleted uranium, of course, oxidizes, so you have some exposure involved there.

And correct me if I'm wrong because I am trying to provide an overview, but the approach for depleted uranium would be to take the urinalysis data for 1990, or certainly that time frame, and back-extrapolate and use that for the earlier period. And the basis that we read in the Evaluation Report was that was, relatively

speaking, a bounding operational period because of the disassembly that was going on, and certainly much more so than in earlier time periods.

I am not going to reiterate my preamble from before, but the question on depleted uranium would be an obvious one. Were the operations in 1990 that you are banking on in terms of your analyses bounding for the depleted uranium handling that existed in the 30 or 40 years previously? And why should we have confidence that, in fact, that is so? That you, in fact, by virtue of, I think a comment that was in there, you know it was just a big disassembly time frame, but without going down to the basics, how many disassemblies, of what kinds of units, and what is the characteristic of the DU in those units or the exposure pathways that were potentially involved? I think that is a first question, a going-in question, as far as back-extrapolating that data in 1990 to all years

previously.

Now the default to not having data for an individual would be to go to the air sampling, which we just talked about. There again, my concern over that is how representative was the technology, how comparable was the technology? How representative was the sampling itself that was done? Could you rely on it that way?

Typically troublesome is a number of workers and health physicists have told us that a body of air sampling records were discarded, destroyed, not available. I don't know what that would imply then for using some of that information.

It sort of reminds me of situations that we have confronted elsewhere where I'm trying to chase down documentation. Of course, we stopped our review because this Work Group needed to meet and everything. But that is one of the questions I have. How many records were destroyed and certainly air

sampling was fingered as a set of records that were destroyed, but there isn't a whole lot of data. I think we admit that, when you go back in time, the data seems to be lacking. But how much of that data is lacking because it was discarded? That would be a question I would want to really look to because that would certainly get into the integrity of the database.

You know, are we dealing with the whole set or are we dealing with a partial set, and we just don't even realize it? And there's data missing on air sampling, maybe event-driven bioassays. I don't know.

So, in terms of stepping back from it, I think those are the kinds of questions we have to answer when we get into some of this data review. It goes to the integrity and completeness of the database, and also the comparability and the back-extrapolation method.

I think any time you back-

extrapolate, I think the hurdle is higher to show that that's okay, that you can do that using modern data and applying it back. In fact, I think it becomes quite a challenge. Again, I don't think we are quite there yet.

MR. ROLFES: You know, if the potential for internal exposures in the earlier years would have been the same as it was in a more recent time period with this assembly, then I would be more concerned. But everything that I have seen, everything that I have heard based on interviews, research, documentation, show that new metal parts being sent to the site didn't present a contamination potential when they were being assembled versus when they were being disassembled.

To clarify, we don't necessarily rely upon 1990s data for reconstructing uranium intakes, for example. We do have bioassay results back in 1959 for uranium exposures. That would be the most important

information to use for a dose reconstruction for that individual.

So, I do want to say, although we don't have a huge database of bioassay results, we do have bits and pieces of information. Whether it is complete or not, I don't know, and I doubt if I will ever know.

MR. FITZGERALD: Well, I'm a little confused then. Because I think from the Evaluation Report, and maybe I misread this, NIOSH also sets intakes for 1961 to 1979 to be equal to intakes for 1980 to 1993, keying on 1990, because they are significantly favorable to the claimant, and again, because of the dismantlement activities and other activities.

So, it would seem that there is that judgment being applied that this would be bounding, that a later period would be bounding.

MR. ROLFES: Well, I guess I should clarify because this is for an

individual who isn't monitored. If they don't have monitoring data in their file --

MR. FITZGERALD: Right.

MR. ROLFES: -- then we would default to the information in the TBD.

MR. FITZGERALD: Right. Right. Right, and this is a coworker approach. But, again, I would hesitate to support that without understanding how these variables play out.

I think the number of dismantlements is not alone sufficient to make that judgment. I think it gets to the exposure pathways that might have been associated with the dismantlements more than anything else.

MEMBER BEACH: Mark, how much bioassay data do you have from 1959?

MR. ROLFES: I don't know if I could answer right now. Since it was largely an event-driven program, there's a couple of handfuls, I would say. For example, in 1959,

I want to say I have seen a couple of sheets that have results from that. I can probably take a look in our Site Research Database over our lunch break and get back to you.

But I would say it is probably about a handful of 10 people that would have received components and cleaned them, for example, and may have had an incident where, you know --

MEMBER BEACH: Okay. So, you are talking about just a limited number of people?

MR. ROLFES: Yes, it was a limited number of people.

MEMBER GRIFFON: And before we break, it seems like it's getting to that lunchtime hour, but --

MR. HINNEFELD: The manager did warn us that there is a large group going at noon.

MEMBER GRIFFON: Oh, okay.

MR. HINNEFELD: So, I think it would be better to wait probably a little

closer to a little later.

MEMBER GRIFFON: Well, I was just going to ask if there's any clear actions or path forward on these issues coming out of this meeting. I mean I'm going of struggling with one thing I think, and just skimming your document on this subject, but it seems to me it might be good for NIOSH to add to their basis for this approach.

In other words, specifically referencing some of those interviews, I know I have looked through and I have found some of the stuff on the Site Research Database. Giving that there's only interviews, it seems like there's a lot, and to Joe's point a little bit, there's a lot of people with a lot of experience in the later years. It looks like it might be a little thinner on the earlier years. But this is just me, you know, looking at it for 10 minutes.

So, if you can help us out with here's the key people that we interviewed

related to the earlier operations period, and this is part and parcel to our basis for using this approach, I think that would help. That would strength the -- I guess my feeling is maybe we need some, either, interview or direct data support for that approach that you are --

MR. FITZGERALD: Talking about the objective analysis, yes.

MEMBER GRIFFON: Yes, and the other thing I saw, again, going through the documents, was one of the interviewees mentioned swipe data. I haven't heard that come up, and maybe, again, that may support your position that, if there is swipe data out there from the early period, it may show how little contamination there was, and it may support the argument for, you know -- but I don't know. I think it needs to be a little more objective basis, in my opinion anyway.

MR. ROLFES: The majority of the swipe data that I have reviewed is probably

from the 1980s and associated with some particular incidents that had occurred right before the Tiger Team assessment.

MEMBER GRIFFON: This person wrote down, Component swipe data, 48, 55 through 56.

MR. ROLFES: That sounds like from my notes, then.

(Laughter.)

MEMBER GRIFFON: It was from your interview, yes. Yes.

DR. CHEW: Those are not dates. Those are for specific units.

MEMBER GRIFFON: All right. I thought they were years. That would make sense, yes.

DR. CHEW: It is W48.

MEMBER GRIFFON: Okay, okay, so it was the units. All right. So, it may be in the later years.

You get the idea. If there is some sort of --

MR. ROLFES: Right, it is still

the same weapon. The component is still the same when it is built into a weapon versus when it is pulled out of the stockpile and dismantled, and much of the data that was collected was during dismantlement.

So, if you only have 10 dpm of uranium, for example, in a disassembly in the 90s, you know, it is very unlikely the contamination was at a higher level for uranium in the early days when it was assembled. So, something like that, that would be an example of a piece of information from the 1990s which would be applicable back to 1960, when an assembly was conducted.

MR. FITZGERALD: Well, I think for a number of these hypotheses -- and they are hypotheses -- whether it is uranium, tritium, I think what we are saying is, in terms of focusing on the subjective basis, which is to at least point to the interviews which are particularly relevant, and then on the objective side, beyond the interviews, what

objective basis is there for making the claims? Without beating this to death, beyond the number of dismantlements, what, in terms of exposure pathway, focusing on that, would lead you to feel that the 1990 data would be bounding?

I think you have a number of parameters. You have the monitoring that was done now versus then. You have the operations now versus then. You have the rad control requirements, procedures, and programs now versus then. I think those are the variables that have to be normalized to make the claim that you can feel confident this would bound it.

It is almost the same with the interviews. What we are all suggesting is that the way to normalize those is, how many of these interviews actually date to the period where you would have firsthand knowledge versus secondary or third hand knowledge? Because I think that has a bearing

as well.

So, in general, the theme is the same. We are really saying, how much basis can one get to for doing a very fundamental thing, which is saying -- you know, and this is right to heart of an SEC -- we don't have the data, and the way we are going to address that is by applying the latter day data back in time 20-30 years. I think that is a pretty big leap. I think that is a leap that you can't take unless you provide a pretty good basis, something that makes sense.

That is kind of where it comes to.

MR. ROLFES: We can work to better explain our basis and document that for you.

MEMBER GRIFFON: And the other thing that I think would be helpful, I did see -- SC&A has done some of these as well, right? I mean I saw some notes --

MR. FITZGERALD: Yes, as part of Site Profile.

MEMBER GRIFFON: -- some notes

from SC&A. Okay. I mean, if these things are on the O: drive at least, I know we can't put names in that, but I think that would be useful, too, to have the names, so that SC&A, if they have interviewed them, they can compare notes or they may want to go back to clarify things. Okay.

MR. ROLFES: Yes, I believe our interview notes --

MEMBER GRIFFON: I know there's some overlap. I saw some from SC&A.

MR. ROLFES: Right. Everything that we put into the Site Research Database includes the Privacy Act information.

DR. BUCHANAN: I have one comment. Even back in the 60s and 70s, they did swipes, just to make sure there wasn't any contamination. So, even if they didn't have a full-fledged health physics program and they expected it to be low, is there any -- and, surely, there should be -- some records of yearly or occasional flags --

MEMBER GRIFFON: Yes, to verify, right?

DR. BUCHANAN: To verify that they were clean. And they did that even back before they had all the regulations and instrumentation they have today. In the 60s and 70s, they did that. So, if we had some periodic records of swipes showing that these things were less than detectable or around background for these different cells and facilities, that would kind of support the fact that it was clean. Without that, we don't really have any proof that it was.

But that would be one thing showing that your assumption that it was clean was clean, even if it was once a year or something. And usually, we always did them periodically, even if we didn't have a routine requirement of it.

MR. FITZGERALD: Yes, I have one more.

MR. HINNEFELD: No, go ahead.

MR. FITZGERALD: Okay, one more item on uranium. I am just taking sort of the flow from not only our matrix, but on your response.

But, Sarah, we are walking down the issue number 1, and now we have gone to issue number 2, on uranium, but these all have to do with internal uptake, internal dosimetry and different facets of it. And we are talking about how depleted uranium was handled. We did mention tritium before that, and then, in a broader sense, how internal was being handled as a whole. So, that is kind of the flow of this thing. So, we are finishing up on depleted uranium.

One issue --

MS. RAY: Can I make a comment about the depleted uranium?

CHAIRMAN CLAWSON: Yes, sure.

MR. KATZ: Go ahead, Sarah.

MS. RAY: I have to admit that I have had something going on for a minute, so I

haven't been able to listen to everything. So, I may be repeating something.

But one of the things that I always thought was important was the burning that was done as part of the training for the fire department, and some of the materials that were included were beryllium and depleted uranium. It was like diesel fuel or whatever fuel ignited in underlying pits and then burned into the open air. The fire department individuals only had splash shields. I have pictures of it. It is clear that there was no special PPE for this.

But I would like to make the comment that that is one thing that was done with depleted uranium. I have also heard many stories from workers about being underneath the weapon when they are disassembling and having the black dust all over them. I'm sure other people who have actually talked to the older workers have heard the same story.

Thanks for letting me add that

input.

MR. KATZ: Thank you, Sarah.

MR. ROLFES: Thank you, Sarah.

NIOSH does have information in the Site Profile about the depleted uranium contamination encountered at the burning areas as well the firing sites. So, if you have information that might be helpful to us, I would certainly encourage you to provide that to us as well, please.

MS. RAY: Certainly. And I have one more comment.

At most facilities, I understand it was common practice for the workers to be swiped and showered before they left. Generally, the contaminated coveralls, et cetera, were left in the area where the work was done. That was not the practice at Pantex.

So, depleted uranium and other types of powders like that, beryllium, et cetera, were taken throughout the plant on

individual's coveralls, and they were also in the documents, the weapons procedures, and the meeting cards that were taken to the data center, and then later these same documents had to be shredded. So, there were individuals who were exposed to documents that were coated with many of these materials, including the depleted uranium.

So, thanks again for listening.

MR. ROLFES: Thank you.

MR. FITZGERALD: Yes, I just had one last issue on the uranium discussion or the topic. One issue we raised was the table, I guess in the original ER, which dealt with sensitivity levels in terms of urinalysis data. We expressed a concern over unexplained and implausibly extreme changes in those values.

When we looked through the data, the values were all over the place, and we couldn't understand why that would be. I think in your most recent response that is

explained by indicating that Pantex outsourced to different analytic laboratories and that would give you these different values. But that still leaves us with some pause because, why did you have the widely-divergent sensitivity values from the labs that were providing support to Pantex, and what are the implications of that?

So, I don't have an answer. I am just sort of responding to the response that we are concerned about these divergent values. We understand what you are saying, that it is because you had different labs supporting the analysis, but then it sort of begs the question, what does it mean to have these labs coming in with such different sensitivity values for uranium? Can that be adjusted for? I assume it might be adjustable. But that was something that, for clarification sake, we included, but I guess we still need some clarification on that.

MR. ROLFES: We pointed out here

on page 13 of our response here, beginning in 1959, Los Alamos National Laboratory was conducting bioassays and reported a detection sensitivity for depleted uranium of .5 micrograms per liter. Then, it goes on and records the various other laboratories, tracer lab controls for radiation, Camp Dresser & McKee, isotopes.

Anyway, the approach, if we have a bioassay sample that is, for example, 10 micrograms per liter, and that is the reported detection sensitivity, then the dose reconstruction approach that we would do for an individual who submitted that bioassay sample, we would use that analysis, and we would basically look to determine whether that was a positive value or a less than detectable value. We would still use that, no matter how it is reported to us, in some manner to reconstruct that individual's intake.

So, for example, if an individual had a 15-microgram-per-liter sample, we would

use that to reconstruct a positive uranium result. If the lab, for example, Tracer lab, in 1960 reported that the result was less than 10 micrograms, we know 10 micrograms was the limit of detection. So, we would actually assign a missed intake to that worker. So, we still would assign an intake, irregardless of the lab that conducted the bioassay. It would still be used, no matter how it is reported, I guess I should say.

MR. FITZGERALD: And it would be, you're saying, an adjustment that would be done, adjustment factor?

MR. ROLFES: Well, we would have to make some analysis as to whether it was, in fact, a positive result or a less-than-detectable result or at the detection sensitivity. It is just a matter of interpreting that data.

MR. FITZGERALD: Okay. Thank you.

MEMBER SCHOFIELD: I've got a question for you, Mark. We had AEC and then

we have DOE now. As the years went by, the levels where things are triggered, uptake, airborne uptake and falling down, do we have that data saying, you know, anything below this point was basically ignored? Or what point did they actually look into getting a urine sample?

MR. ROLFES: Well, Pantex, we have been dealing with a lot of production facilities, and Pantex is a production facility, but it is a different kind of production facility. It is not a place like Fernald or Rocky Flats or a reactor site like Savannah River Site or Hanford, or a plutonium fabrication facility such as Los Alamos.

You know, the materials that are being handled exist in encapsulated components. With the exception of depleted uranium and tritium, as we have discussed, the fissile materials were generally encapsulated. If they lost the containment barrier

integrity, they would prompt an individual for a bioassay sample.

So, to answer your question, I have seen historical documents from Pantex which provided specific radiation guidance and specific radiation guidelines for different types of workers. For example, a guard in the very early days wouldn't have been monitored because they wouldn't have been doing the hands-on work that a production technician would be.

You know, over history, in the 1990s all of the guards began being monitored because of some concern that there could have been a potential for exposure, however small it might be. Well, actually, when Pantex badged the guards, and looking at the actual reported radiation doses from those individuals, they found that they were very low. I think maybe out of the several thousand results that they had, they only had like one or two results above the detection

sensitivity.

So, you know, in the earlier time period, they focused more heavily on looking at who was going to be involved in handling components, who was going to be entering area C, the cell area. Those were the individuals and also the radiographers, those were the individuals that they had focused on monitoring rather than assigning anyone and everyone that walked onsite a badge.

You know, practices have certainly changed over time. That is certainly something that needs to be considered, and that we describe how this interpret historical records versus more recent records in our Site Profile.

MEMBER SCHOFIELD: Now let me give you an example. At one point, you say you had 50 dpm or less nasal smear, urine sample, as was called for. Later on, that number changed to 45 dpm. That is the cell CAM I'm thinking of right offhand.

So, I would assume they had a standard in place in Pantex that, okay, if you are under Y over X amount of dpm per nasal smear, we did not bother to send in for a urinalysis, but they could have still have been positive nasal smear there.

Do you know what those cutoff points are?

MR. ROLFES: Well, let me explain, I guess. In the 1961 incident, when there was a release of plutonium, I don't know the specific numbers right off the top of my head which would have triggered a particular bioassay or something, but if there was a containment breach, if there was an incident like that, if they broke a pit or cracked a pit, for example, that was a significant incident, and it had to be reported, you know, for many reasons.

You know, one of the first thing that would be done, if something like that would happen, any abnormal environment

encountered during a weapon assembly or disassembly requires that the production technicians immediately stop work and leave the area and get in touch with their supervisor or radiation safety.

So, it's really an incident that occurs rather than a specific level of contamination because the workers in assembly are truly handling clean components to assemble, rather than they are not going to handle rusty components and build that into a final product and ask DOE to approve that. It requires additional information, not just in a trigger level for contamination.

Does that help?

MEMBER SCHOFIELD: Let me make sure I am understanding you. If they had a known incident --

MR. ROLFES: Yes.

MEMBER SCHOFIELD: -- everyone received -- everyone gave a bioassay?

MR. ROLFES: Right. Right. Well,

I take that back. Now, historically, no, not always, because sometimes they would have an elevated air monitoring result. So, they would investigate it. In some of those cases, we have data written in log books and in notebooks and things that indicate that we have got some swipes here that indicate there's 100 dpm on the floor.

For example, we had talked earlier about the thorium contamination incident. They thought the materials being released were thorium, but it was actually radon. Well, some of the workers' clothing was also contaminated with radon progeny, and they had swiped some of the workers' shoes and clothes around their knees where there's friction and it attracts some of the positively-charged progeny.

So, they had found some contamination on workers of like 100 dpm. But, upon investigation, it was a result of radon exposure. There are things like that.

Now if there was a significant incident with a cracked pit, for example, that would have prompted a bioassay. Sometimes there was uranium contamination in an earlier time period. Sometimes that information is recorded in log books.

There's specific circumstances that, I guess, you know, if there is a specific incident, I can answer a little bit more specifically to you about what the procedures were and such. But I am trying to give like a general response. So, if you have another question, I would be happy to answer that.

CHAIRMAN CLAWSON: You know, that really brings up the whole thing as to whether they considered the length that --

MEMBER SCHOFIELD: In fact, what are these levels? If they don't know, I mean, you know --

CHAIRMAN CLAWSON: What's going to push us into an incident? That one is a

pretty loaded question.

Myself, you know, I still need to get a clarification or excuse that on issue 1 I guess I need to figure out, in my eyes, what we are going to do on issue 1 for the adequacy of the data, and so forth like that. What I got from you, Mark, was that NIOSH is basically going to go back and justify as to why they --

MEMBER GRIFFON: Further justification for their approach.

CHAIRMAN CLAWSON: Further justification, yes. I want to make sure that we did not miss that, Mel, because, to tell you the truth, I am really having a hard time understanding how we can take it from here and extrapolate clear back 30 years, and we don't even know the parameters and stuff that were going on. So, further clarify that.

MR. HINNEFELD: This is Stu Hinnefeld.

I want to make sure we capture

what we are supposed to do. That one I think is pretty clear, and we will go ahead and do that.

And I believe we also promised to put interviews in a particular place on the O: drive, where they would be readily available. That's what I remember hearing as to what we said we would do.

Now the point in our normal process when we came in here was that SC&A delivered their report some time ago, and then, fairly recently, we delivered, essentially, a response.

Now it could be that SC&A has made all the points they want to make on number 1 and don't feel they need to write anything in addition on that, and we can go do what we want. But I think it still is, by normal form, it would be SC&A would now be able to say, well, your response to our earlier document isn't convincing on finding one in these areas.

So, I think that might be available to them, although if it has all been covered here, and it will all be addressed by our providing additional basis for this, I guess, approach. Then I am just going to leave that to you guys about whether you feel there is more to write, there's something to write or not.

So, I mean that is typically what is done. We sort of exchanged these products, so the discussion is essentially down on paper in writing, rather than just in the transcript.

MR. FITZGERALD: Let me comment. I think that is correct. But if we have issues of the kinds we have just talked about, where we have raised concerns -- and we raised the same concerns in the Site Profile reviewed back three years that we are raising now with the ER, and the response is pretty much the same, that we have confidence in the tightness of the program back in time, and that we

believe that we can extrapolate, based on the feedback we've gotten from workers, and what have you.

There's not much more. So, we have beat this thing. So, what I am saying is that, okay, I understand what you are saying, but I can't get there until you go that next level down and give me further justification for this position because it seems very subjective at this point.

MR. HINNEFELD: Okay. So, your conclusion, then, is that you have provided what you wanted to provide? In earlier writings and in discussion today, it is all in there.

MR. FITZGERALD: Right.

MR. HINNEFELD: Okay. All right. That was all I was asking.

MR. FITZGERALD: Yes, yes.

CHAIRMAN CLAWSON: That's a very good point. This thing is a little bit difficult because it has been such a long

time.

MR. FITZGERALD: Well, it's difficult because I think everybody agrees that the data is lacking or marginal in the timeframes. And we usually don't talk about things being marginal before 1990. We were in better shape than most sites by the 70s and 80s. But, in this case, it is different, for the reasons we have discussed.

So, we are just saying that, in terms of back-extrapolating, I think that further justification is warranted, and that to save some time, I mean, you know, it is the same issue going through -- I was just kind of looking at this and saying, well, plutonium, uranium, enriched uranium, tritium and thorium, I mean in all cases it is very similar, that we don't have the data, and what's being proposed, whether it is 40 DAC-hours for plutonium, for example, as an index, taking something from the 850 reg -- 835 reg, which is the 40 DAC-hour, 100

millirems, and using it as an index going back in time, because the assumption is that would be bounding. I think the issues are very much the same. So, different nuclides but the same issue.

So, without banging this thing continuously, I think for all of the constituents that are important to Pantex, the data is lacking in the early years and the approach being proposed doesn't have enough edges on it for us to feel comfortable, I think is the best way to put it.

MR. HINNEFELD: And the justification may, in fact, need to be nuclide-specific because there would be differences in source terms.

MR. FITZGERALD: Yes.

MR. HINNEFELD: All right.

MR. FITZGERALD: So, I would propose, you know, I was just looking ahead. We have carved this out by nuclide, but the issue is the same and you have read it. I

think the issue is the same, that we can understand this better if we can get further justification and know what you are hanging your hat on.

We discussed the variables involved, and some of this may have to be in secure locations. But I think as soon as we get a lock on the representativeness and the ability to feel confident about back-extrapolating, I think a lot of this issue will be resolved, or not.

MEMBER BEACH: Brad, I have -- oh, I'm sorry.

MR. KATZ: Go ahead first.

MEMBER BEACH: This is a real minor point, but the draft response to SC&A's issues on the Pantex Site Profile, did you send out one that was not a draft or was the --

MR. ROLFES: I don't think SC&A has ever finalized their report. So, all of them are draft.

MEMBER BEACH: Okay. Could you date these when you send them out?

MR. ROLFES: Which?

MEMBER BEACH: This is actually NIOSH's report --

MR. ROLFES: Oh, okay. Okay.

MEMBER BEACH: Just I was curious as to when this one was --

DR. NETON: I had the same comment myself. It was February 25th, 2010.

MEMBER BEACH: Because I did not -- February what?

DR. NETON: February 25th, 2010. That's the date that the email was distributed before.

MEMBER BEACH: And that's this report, right? Okay.

So, like in the future, it would be helpful --

CHAIRMAN CLAWSON: 2010?

MEMBER BEACH: Mel's appendix was dated, but I wasn't sure if it was the same.

DR. NETON: I apologize.

MEMBER BEACH: No, I appreciate that. Thank you.

MR. KATZ: So, the only thing, it sounds like we have these DCAS action items, generally to shore up the basis, explain the basis.

The only thing I see here that, SC&A, you raised, Joe, you raised the issue of wanting to follow up on the question of the extent and nature of records that were discarded at the site. Is that something that --

MR. FITZGERALD: Well, in looking at data adequacy, we typically follow up on that. We received that input during the Site Profile review and haven't done anything with it because, again, I think that speaks to the SEC information. So, that would be something for the Work Group, but this is the question of completeness of records with the worker interview input, that maybe some of these

records were discarded or destroyed, and what are the implications of that? I mean so it is similar to what we have addressed elsewhere, but we have not looked at it yet.

CHAIRMAN CLAWSON: Well, we are still trying to get in down there, though, too.

MR. FITZGERALD: Well, that is a logistical issue --

CHAIRMAN CLAWSON: Yes.

MR. FITZGERALD: -- but I think that is a question that the Work Group would probably need to at least address as far as whether that has implications. It was a worker input, but I think it deserves running it to ground. I mean, does anyone have any records of what records were destroyed and which ones were they? And does that bear on what we are talking about here?

I mean it would have a big impact if it turns out that a lot of bioassay or air sample records were discarded, and it sort of

leaves you with some question about what you are looking at, how complete it is.

MR. KATZ: Is there something the Work Group wants SC&A to pursue?

CHAIRMAN CLAWSON: Yes, it is one we are going to bring up in every site, that we are going to have to look at that.

MEMBER GRIFFON: Yes, I think that is an SC&A action probably.

MR. FITZGERALD: That's fine.

MEMBER GRIFFON: I'm a little concerned that we don't have more handle on it. I mean, do they know time frame? I guess it is what you've got to find out, right?

MR. FITZGERALD: Well, as compartmentalized as Pantex is, I mean it is a challenge to walk down something like that and to figure out who might actually have that information.

DR. CHEW: Did you get that information from the worker interview?

MR. FITZGERALD: We talked, yes, we talked to -- I can pin it down, but we have the interview where that was mentioned. It was in our sampling data. I can give you more information, but it is one of these things you file away, and you want to go back to, but, frankly, given the context of the Site Profile, you are not going to spend a lot of resources chasing every lead down. So, I wanted to at least mention that because I think it is now relevant to this review. We certainly would do that now.

CHAIRMAN CLAWSON: Well, I'm looking at it a DNFSB report sitting right here, and it says radiation safety personnel must document their technical evaluations, basically, their wipes and everything else like that. That was found as a finding from even them.

MR. FITZGERALD: You have two HPs. You are not going to have a formal program as much as you would like, I'm sure.

CHAIRMAN CLAWSON: Yes, I understand that.

Well, my suggestion is that we break for lunch. We've got, actually, one item done pretty well.

MR. FITZGERALD: Well, no, actually, it is four issues, but they are all internal, which I think is the toughest nut. With some optimism, that was the tougher issue. So, it is not as bleak as it looks schedule-wise.

CHAIRMAN CLAWSON: And we've got SC&A as cast to look into the records that were taken care of, and NIOSH is going to just reaffirm their stance. I don't know how you put that.

MEMBER GRIFFON: Or strengthen their argument, yes, and to post the interviews.

CHAIRMAN CLAWSON: And now what I would suggest is it's 12:30 now, well, actually, almost 12:40. Why don't we break

for lunch? And we will return at 1:40.

MR. KATZ: For folks on the phone, 1:40 we will reconvene.

(Whereupon, the above-entitled matter went off the record at 12:38 p.m. and resumed at 1:45 p.m.)

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A-F-T-E-R-N-O-O-N S-E-S-S-I-O-N

(1:45 p.m.)

MR. KATZ: Good afternoon. This is Ted Katz, the Advisory Board on Radiation and Worker Health, Pantex Work Group, and we're reconvening following a lunch break. Let me just check on the line. Do we have any of the petitioners back with us?

MS. RAY: This is Sarah and I'm back.

MR. KATZ: Hi, Sarah. Very good.

CHAIRMAN CLAWSON: Okay. Anybody else we need to check with?

MR. KATZ: No, I think not, actually.

CHAIRMAN CLAWSON: Okay. I guess I will turn it back to Joe. We got through the first initial ones.

MR. FITZGERALD: Yes, I think we went through issues 1 through 4, and the 2 through 4 were just specific topics that were internal topics. Issue 5, the metal

tritides, I'm not going to spend a lot of time on that because I think we're familiar with the question. The issue for Pantex, or what's relevant for Pantex is what was handled, the presence of an exposure pathway. I think we prevented -- in the Site Profile Review, we identified a couple of possible pathways that need to be addressed and I think the assumption that it represented such a small contribution, I think we just need to validate that. And that's something that, certainly as an action, SC&A spent a little bit of time. We didn't do that in the Site Profile, but I think there's been a lot of discussion on the topic over the last two or three years, so I think we're better equipped to put that one to bed, if that's the notion.

And Sarah and Lars, this is the question of particulate -- the particulate form of tritium and the extent that it's insoluble presents a more significant potential dose if it's present to the worker

for which bioassay and more routine means of monitoring is not going to pick it up as easily because of its insolubility.

We've addressed it at other sites, and what we're saying is that's something that as a component of the tritium inventory, the tritium that was being used at Pantex, we would similarly want to establish to what extent it contributed or not contributed, and that's what we're talking about here.

MS. RAY: Can I make a small comment related to that?

CHAIRMAN CLAWSON: Yes, Sarah.

MS. RAY: My husband, Mike Dvorak, who is now deceased, always warned me about tritiated water being present outside the 64 bays because they were immediately adjacent to the 44 cells where the large release occurred. And I wonder if something like this had been considered, if anyone had ever looked into it, because there's many ongoing problems with leaking roofs at the plant that

I don't even know if it fixed this stuff. And I know I'm very sensitive to mold, and I can always smell wet when I pass that area. But, to me, I think that is a form of soluble tritium. I'm not a scientist, but tritiated water is not a good thing, is it?

MR. FITZGERALD: Yes. Well, that's a slightly different issue. What we're talking about, actually, is the sort of opposite form, the insoluble -- more insoluble tritium, the particulate form of tritium which does exist.

MS. RAY: Okay. I'm sorry for my misunderstanding. Thank you.

MR. FITZGERALD: But it's a very, very specific topic, something that's related to weapons components and something that we would want to address for Pantex and we did identify some possibilities in the Site Profile Review, but what I was saying is that there's been, I think, a fairly rich discussion on the topic for other sites,

including Mound and Los Alamos, and I think we're in a better position to complete a review of that and decide if it's an issue or not.

In the NIOSH response, I think the point that was made is that if it does exist, it would be a small contribution, but we have some questions regarding the compound identified in the exposure pathways, and we'll have to address that later. But I just want to go ahead and highlight that it is a question that we have, and I think we're in a pretty good place now to look at it. And I think there's some agreement on what the issues are, as far as exposure pathways and insolubility, so it's -- we're in a much better position than we were two or three years ago to take that to ground.

DR. BUCHANAN: Is that an action item for SC&A?

MR. FITZGERALD: Well, I'm just saying yes, we can certainly evaluate the

presence of the implications. Obviously, NIOSH would want to see that evaluation.

MR. ROLFES: I guess I'll sort of answer Joe and the petitioner, and also the petitioner was asking about the concern about tritiated water at the site, and that was following the event in 1989 where they had the tritium release. They had contaminated one of the cells with tritium, and basically shut it down, and made it inoperational because of the tritium contamination inside. And they were actually doing some solubility studies; they monitored the tritium concentrations in the cell, and they basically found that the tritium that was migrating out of the cell walls and floor was actually still elemental. It hadn't oxidized. But, yes, that was sort of a separate issue, as Joe explained, for the petitioner, Ms. Ray.

The other concern -- we've identified a couple of concerns with

potential exposure to tritides at the site, and we explained that elemental tritium can migrate through welds on reservoirs and potentially form an insoluble compound, but it's really not very likely, it's not very high-potential for that to occur because of the material's compatibility that Mel had previously described and the specific construction of those reservoirs and things.

The other piece of information that we have looked into is the tritium in neutron generators and we looked at the destructive testing operations that were done on site at Pantex inside of the confinement chamber. And we, basically, looked at the numbers of tests that were done and the amount of material present. And, really, a hypothetical individual, if he was routinely exposed -- we have this in our Evaluation Report, but I did want to remind everyone of it. And I think there's also an interview documenting our assumptions for determining

whether an individual could have received some measurable intake of tritium from these operations. And we found, like, I think the highest potentially exposed individual wouldn't have received more than a millirem lung dose in any given year from basically doing this destructive testing operation and the subsequent cleanup. That was based upon some worker interviews, and historical recollection of the contamination levels encountered.

MR. FITZGERALD: I would propose that we would look at the specific interviews and any additional information. And some of this would be classified, but any additional information that would focus on potential exposure pathways, identity of compounds. And if there was any monitoring, how the monitoring was done. Basically, that would be it.

CHAIRMAN CLAWSON: Okay.

MEMBER GRIFFON: So, that's SC&A's

action, just so we keep track.

MR. FITZGERALD: Yes.

MEMBER GRIFFON: Okay. Bob, on sources and pathways, really --

MR. FITZGERALD: Sources and pathways, I mean, I think we've established a pretty good regime as far as how it looked and I would propose, if we do find something that perhaps stands out, we'll bring it back to the Work Group. If not, then we'll close it out. It's one or the other.

The next issue is interpretation of external dose data. Hans, are you still on the phone? We might have lost Hans.

DR. BEHLING: No, you have me.

MR. FITZGERALD: I was going to defer to you since this is an issue that sort of flowed down from the Site Profile. Do you want to just provide an update on that and any implications from the SEC standpoint?

DR. BEHLING: Yes, when I initially looked at it, and I'm going back to

some of the documents that are several years old and do not, necessarily, track some of the more recent documents that have only provided a summary. But in my original response to the review of TBD-6000 on external dosimetry, I did look at some of the things that -- and I don't want to over-dramatize the importance but it did bring out the question that in Pantex, the dominant photon energy was 60 keV photons. For instance, in Section 6.5.3.1 of the TBD, you will read, and I'll quote directly, Pantex claimed film badges and TLDs were originally calibrated with radium 226 and cesium 137 sources with the exposure measured with victorine ion chambers, et cetera, et cetera. And, of course, when you do look at film dosimeters, you realize, and I know, and I fully understand and recognize the limitations associated with film badges, the sensitive portion of film badges is really filled with bromide, which is a high-Z

material, and as everyone who understands basic health physics knows, the interaction of radiation with matter, including, obviously, dosimeters at low energy is driven by the photoelectric effect, which is highly Z-dependent. And, of course, what that means is that for the open-window portion of the two film dosimeter types, you would have an open window that grossly, grossly over-responds to the high-Z material in film. But you may have the converse issue associated with the Hp(10) dose, or the deep dose for the early dosimeters, and probably still today, using a filter of material of lead is used, which is a high Z material. And what it really amounts to is that when you have a filter of 1,000 milligrams per centimeter squared, it's not so much the actual material thickness in milligrams per centimeter squared, as it is the material in question. So, if you had 1,000 milligrams per centimeter squared of tissue-equivalent

material as a filter versus lead, you will see very different responses; meaning that the lead for low energy photons is going to attenuate to be much, much, much more effectively than a tissue material of equal milligrams per centimeter squared value. In looking at that, I just came up with the notion that perhaps if you're dealing with the most highly exposed individuals, and those are the people who would be assemblers, or dissassemblers, who would be, potentially, exposed to bare pits, and not only to the primary beam of 60 keV, but, perhaps, modestly attenuated photons of 60 keV, you would, perhaps, grossly underestimate the deep dose. And that was one of the concerns.

MR. ROLFES: Hans, this is Mark Rolfes. We did take a look at this and had prepared a response, which I don't want to go through in detail here. Let's see. We did look at this, and, basically, our end result, the film badges under-responded to lower

energy photons, but it was a relative response to the two-element film badge to 60 keV photons from americium was approximately one. It was nearly unity. Multi-element film badge typically over-responded to 60 keV photons by a factor of 1-1/2 to 2, and its response at 60 keV exceeds the Hp(10) value by a factor of 1.5. Measured doses to 60 keV photons from americium-241 could be as much 50 percent higher than the actual dose received by the employee. Thus, the reported photon doses should not be underestimated and will be claimant-favorable.

DR. BEHLING: Well, again, I know that much of that work involves other people who tested dosimeters and came away with those conclusions. But as was earlier stated by a number of people, including Joe and other Members of the Work Group, what you see is not always what you get and in my original report, if I recall, one of the things that bothered me was, in 1980, an investigation

report that was submitted by the Department of Energy, who responded to a given incident in which a very, very high dosimeter reading occurred. And I think I want to just point out, and you probably don't have access to the particular write-up that I had that talked about -- and I quote verbatim from the 1980 DOE's investigative report. And what they came to conclude was, the people who were, at that time, and this is in 1980, which is, obviously, far further advanced, and you would expect a higher degree of competency. And I think this was discussed earlier about the quality of people who, at that point in time, should have been regarded as health physicists at the post, and safety technicians, or anything else. And what they concluded there was, obviously, the potential deficiencies in the qualifications of people responsible for the dosimetry program in that report, those who have my initial report that I think was part of the initial TBD review, I

took direct quotations from that investigative report, in that they identified the two technicians responsible for the dosimetry program. This is as late as 1980, who had little or no training at all. And they also identified serious flaws among the assemblers who should have been the primary concern. And under guidance that -- with limited guidance, they should have been given monthly dosimeters; they were given quarterly dosimeters. And a deficiency in that is that supporting dosimeters was not able to measure neutrons. There was no -- these were TLDs in those days, and reporting dosimeters did not have the capacity to measure neutrons exposure. And these are the people who would have been exposed to both photons and neutrons. And, of course, that -- 12 out of 16 people were given quarterly badges instead of monthly badges. And that kind of deficiency is sort of symptomatic, people who may not, necessarily, always play by the

rules or know what the rules even are.

And all I'm at this point, I'm pointing out here, is that you may have on the surface a competent dosimetry program, or what appears to be, but in reality, and I think Mr. Schofield pointed that out, when you look a little deeper and you actually see what happens in the field or in practice, the two are not, necessarily, always consistent with what guidance documents, or what your expectations are versus what in truth really happens.

MR. ROLFES: So, Hans, you're saying that this is a separate issue, I believe, than the calibration of the early film badges. I think you jumped from one to the other.

DR. BEHLING: Well, it is both, in fact. It's part of the investigative report that the DOE issued in 1980. They found that, for instance, the calibration curves and other things that are normal standard

procedures for operating a dosimetry program was simply not in place. And all I am saying at this point is, regurgitating some of the comments that were made earlier, is that, perhaps, the emphasis at Pantex was not necessarily always towards the safety regarding radiological safety, but perhaps safety regarding explosives and other issues and the competency of people who were in charge of the RadCon program was perhaps not what it should have been.

MR. ROLFES: Hans, it's Mark again. Could you provide like a Site Research Database reference ID for this report that you're referring to, so that we can take a look at it?

DR. BEHLING: Yes. In fact, for those who may have the original write-up, I included the excerpts of the DOE report as Exhibit 3. It was written by Herman Roser, Manager of ALO, and it has -- let's see here. I provided that as an exhibit in my write-

up.

MR. FITZGERALD: Yes, I think that's under the Site Profile report --

MR. ROLFES: Okay.

MR. FITZGERALD: -- from 2007, so that might be the easy way to do that.

MR. ROLFES: Okay. Thank you.

DR. BEHLING: But, anyway, that's pretty much what I had to say. As I said, I believe you may have a better handle on deficiencies regarding the ability to measure the Hp(10) dose for a low-energy photon. And, as I said, I don't want to overstate the issue. I think it may be a modest issue. Perhaps the other issue, and I think Joe will discuss that and I think you addressed it, is the issue of the neutron/photon ratio. And that was also discussed in the regional review of the --

MR. FITZGERALD: Yes, to summarize, I think this is a clarification issue, but our sense is it may not be an SEC

issue with that clarification, so not to -- certainly, not on the level of some of these other questions we've raised.

CHAIRMAN CLAWSON: So --

MR. FITZGERALD: The only outcome or action would be if we can get those clarifications, my sense is that that would resolve the question or issue.

CHAIRMAN CLAWSON: Would that fall under NIOSH's --

MR. ROLFES: Is that enough clarification on whether the film badges were able to detect 60 keV photons? Yes, we can put all the --

MR. HINNEFELD: I think the completeness of the response is that everything was written in the Site Profile Review about this issue. Hans was talking about this investigation report that cited qualifications of people, calibration curves, in addition, the keV. I mean, there's a body of work out there, and we just need to make

sure that our response carefully addresses those findings in the report.

MR. FITZGERALD: Yes, we went to the Site Profile for the matrix and there is clearly issues that we sense there was a couple of pieces missing, but with those pieces provided, it didn't look like it would rise to a question of dose reconstructability, that there would be enough information there, but we're not quite there, as far as the body of information. I think that's what we're saying in this one. We sense that maybe with these pieces of information it would be tractable.

Anyway, that's what I would say at this point.

MR. ROLFES: Americium in growth in the 60 keV photon really wouldn't be too significant in the early time period, just because they're receiving new materials. And, really, it wouldn't have been until years down the road when americium ingrowth

becomes a major contributor to the dose rate from a plutonium pit. And I think that was probably during the time period when there were TLDs on site, so it really shouldn't apply to individuals issued film badges. It sort of seems like the highest ingrowth for americium would have been, you know, in the 70s forward, and continuing on. And it really doesn't appear to be a significant issue to me for Pantex, because of the time period that plutonium came on the site and other factors.

MEMBER SCHOFIELD: Do we have records showing what the level of the specs were for level of purity, and others like americium in the 40s, 50s, 60s?

MR. ROLFES: Well, it certainly could have changed over time.

MEMBER SCHOFIELD: And the level of enrichment makes a difference.

MR. ROLFES: Well, those -- yes, there's a couple of different things. We're

talking about photon dose rates. The level of enrichment wouldn't have too much of a difference on the photon energies, but plutonium is a different material, because enriched uranium is primarily U-234, -235 material. And when you get into plutonium, you have other isotopes in there. You have plutonium-240, -241, -239, -238, so it's really the --

MEMBER SCHOFIELD: Do we have the specs, is what I want to know?

MR. ROLFES: Well, we don't go back to that level of detail, because we don't really need to. If we have a -- and also, the americium ingrowth comes from the decay of Pu-241, and we don't need to sample that material or know the exact isotopic composition of the plutonium being handled, because for this instance the dosimeters that were used in the 1970s forward would have been capable of detecting americium photons 60 keV and higher. We have no indication

that the film badges in the earlier time period did not detect those, so I think what we're going to do is go back and restate our response here to show why we believe that.

DR. CHEW: To answer your question, Phil, we can tell you what the Americium specification codifies, because that's well documented. However, you need to look at what Mark is saying, and when does it really apply to the dosimetry method that they were receiving. So, by the time the issue came to Pantex, the TLDs were closer, the americium growing became a significant contribution with dose.

MEMBER SCHOFIELD: Right.

DR. CHEW: And I think you know what the parts per million is.

MEMBER SCHOFIELD: Yes. But I was just wondering, particularly like the 50s and 60s, because starting in the 70s I know what the standard was.

DR. CHEW: Right.

MEMBER SCHOFIELD: Better than those earlier days, and it does make a difference which material was -- for which complex or which device it was being designed for. There is a difference in the specs.

DR. CHEW: It was even better. Okay. Because that was a big concern.

MEMBER SCHOFIELD: Yes, just because in some cases that would make a difference.

DR. CHEW: We don't want to get into the neutronics -- you know, you -

CHAIRMAN CLAWSON: Okay. So, NIOSH is going to just kind of shore up their position on that. Is that my understanding?

MR. FITZGERALD: Well, I think, again, it's just the clarification that there was a few loose ends from the Site Profile Review. We recognize that some of these issues are carried forward and we think with that clarification, I don't see this being an SEC issue but it would be useful to have that

closed out that way. And I think some of what Mark is alluding to may help, so I think that's where we stand. I mean, that's my sense from what work Hans has done, as well.

CHAIRMAN CLAWSON: Okay. The next one.

MR. FITZGERALD: You mentioned the neutron to photon ratios. Let me preface my comments by saying, and I'm not going to dwell a lot on where we came from because I know NIOSH has changed its approach pretty much entirely on neutrons. So, to some extent you take --

DR. CHEW: I'm glad you recognized that.

MR. FITZGERALD: You've taken that issue off the table, at least on some of these issues. But the original question was back-extrapolating a neutron/photon ratio, a median and an upper bound using data from 93 forward, going backwards in time. And I won't dwell on some of the heartburn that we

had on that, because I think some of it is obvious in terms of the things we've talked about, as well as the representativeness of the values and whether or not you had good measurements. But the -- and I'll let Ron get into details. The proposal is to actually use the data that's available and to as a default apply MCNP to provide additional data, which is not a strategy that's too different than what we've been talking about Mound. So, to some extent this resonates. But let me let Ron walk through not so much our comments on the original proposal, but we had a number of issues with back-extrapolating a neutron/photon ratio, but to respond to what we understand is your new proposal, which is in the latest response.

To answer an earlier question -- I think Stu mentioned it -- we haven't had a chance to provide a written response on this new proposal, so we may reserve the right to do that since this is a completely different

approach on the neutron issue. Actually, it's a very positive movement, I might add, so maybe our comments are less critical. But, Ron --

MR. ROLFES: Can I -- before he explains, can I explain what we did?

MR. FITZGERALD: Oh, I'm sorry. Go ahead.

MR. ROLFES: Okay. Like you said, what we did previously, we had based our neutron to photon ratios for workers in the early time periods of operation at Pantex, we used data from the 1990s when the TLD DOELAP accreditation was in place and such. And we certainly acknowledge there was some uncertainty. However, we felt it was claimant-favorable. And you also had some concerns about it, as well. And in the process of going back, we realized we had all of the previous data for neutron exposures that we just didn't use at the time in order to make a claimant-favorable decision, and a

timely one for workers, as well. So, what we did -- what we've done now, we've gone back, instead of using neutron to photon ratios, we propose to use a neutron coworker model, essentially. And we put together in our response here a summarization table of the median neutron doses in millirem per month for various time periods and we go back all the way to 1952: probably not realistic. It's probably a better -- a better begin date is probably around 1958 for assigning neutron doses, because fissile materials were not on site until the late 50s.

Anyway, there were a couple of errors that I also wanted to point out. The error bar in the first column there says 91.4 millirem per month. This is for median neutron doses per month, and it's figure 7-1. That error bar is too short. It should -- excuse me, not the error bar, but the column height. If you take a look, it says 91.4, and it's shorter than the one that says 86

next to it.

DR. CHEW: Mine is correct.

MR. ROLFES: Mel's is correct, but mine is not, so I think --

DR. CHEW: Nobody else has a problem, but that's okay.

MR. ROLFES: Anyway, this goes through in error-specific, then gives the median neutron dose --

DR. CHEW: Joe, we all see the corrected one.

MR. FITZGERALD: I already --

DR. CHEW: Okay. Got it.

MR. ROLFES: Okay. Anyway, this gives you an understanding of historical neutron doses based on earlier monitoring. And we've got TLD data back in the 70s, but prior to 1978, we were relying on NTA data, Neutron Track Emulsion Film. And what we've done in the attachment of this response here is explain some of the correction factors that went into correcting personnel neutron

doses using NTA film as the basis. So, anyway, that's all. I just wanted to give you an update as to what we've done since your review, since SC&A and the Board --

MR. FITZGERALD: Well, again, I think this is pretty significant. Ron, why don't you --

DR. BUCHANAN: Okay. So, we've heard a little discussion on neutrons. And this is a little different than all the other issues during this meeting, because before we -- they had our Site Profile Review, they responded, we responded, they responded, and then -- but this is a different approach, so I want to take a few minutes and bring everybody up, especially on the phone, where we're at on the neutron issues at Pantex.

Okay. So, Mark has said some of it, Joe said some of it, and I'll go down to a brief outline, and then go to the questions. Mainly, this is a fact-finding clarification on my part to find out some of

the -- how they're going to apply the new method, and then we can determine whether we agree or not with that maybe in the future.

So, on pages 24 to 30 of NIOSH's response, this is issue 7. And originally, way back in the Site Profile, SC&A had brought up concerns about using N/P values, that is, assigning neutron dose depending on the photon rester dose of the worker. And some issues we had was the back-extrapolating for 42 years, 1.7 being a bounding value and reliability of some of those concepts. So, that was issue 7, item A through D. So, NIOSH, apparently, then said okay, we've got the data. We'll just use the data rather than using the N/P values to assign neutron dose.

So, what we did recently was try to evaluate that, and the questions I had on it, because that gets rid of a lot of problems we had in the past, but it also brings up new areas of concern, and these are

very similar to Mound, because Mound is, apparently, what -- this was a takeoff of Mound's neutron issues. So, some of the solutions were applied to Pantex here, which is okay if they're correct.

I did have a question on page, I think it's 24, where you say, thus, the N/P ratio approach will not be used directly in favor of establishing unmonitored personnel neutron dose based on actual records. What is the word directly; why is that in there? Are you going to use N/P otherwise? Why did you use the word directly -- will not be used directly? Am I reading something in?

MR. ROLFES: I don't think you are. This is a draft method that was put together to be responsive to SC&A's review, so I guess, ultimately, it will be, as far as what directly means, I don't know, but --

DR. BUCHANAN: You're not using N/P.

MR. ROLFES: No.

DR. BUCHANAN: Okay.

MR. ROLFES: We propose using this updated method, since it was responsive to SC&A and the Advisory Board's review.

DR. BUCHANAN: Yes. Okay. I just want to make sure that -- well, some of it we're going to use, and some of it we're not. That's what I was trying to clarify. Okay.

Now, the reason that initially N/P ratios were being used is because NTA film does not sense neutrons below about 500 keV. So, this is where the SEC issue comes up is, can you reconstruct dose, because NTA film doesn't sense neutrons below 500 keV. So, now we're back to using the NTA film results. Then we have to say, well, how can we reconstruct this dose if it's below 500 keV?

DR. CHEW: Ron, I just want to clarify what you just said. Okay?

DR. BUCHANAN: Okay.

DR. CHEW: The original N/P ratio was based on some measured data by measuring

the units themselves. Okay? So, they didn't represent what people were -- it did not represent a personal dosimetry, but measured data. And there are several measured data because of the NRAD studies, and I think you're familiar what that is for the -- to deliver the radiation exposures to the military, giving them information. They show neutron to photon ratio is much higher than 1.7. That was what the original was. Okay? And then, because those are measured information on the unit themselves, not necessarily a person being measured. Now that we're using personal dosimetry information, it has been clarified that the basis is 1.7 radiation.

DR. BUCHANAN: Okay. So, when we use the original recorded individual worker's dose either to assign dose to that worker or we create a coworker database for unmonitored workers that did not have neutron monitoring, we have to address mainly three issues, and

how are we going to treat the neutron dose that fell below 500 keV? How we're going to treat fading, because when the film is -- NTA film is exposed to neutrons, it will start to fade until it is developed, and then read after that and recorded. And thirdly is about the angular dependency of NTA film. If you -- it's calibrated usually normal to the plain of the film. If the exposure is to the side, then it has less sensitivity to it, so we have to compensate for that.

So, those are the three issues and NIOSH addressed this in their response on page 26. So, they say that the correction factor is the threshold factor, the angular factor, and the fading factor. So, what I'd like to do is discuss these issues somewhat.

Now, we haven't had a time to look at this data in detail, such as Figure 7-1 of the report Mark just spoke on, break it up into intervals. I guess this is major campaigns or major weapon types that you're

dividing it up into here, which is -- this is per month. So, if you're assigning a dose for a year, you'd take this times 12. And, for example, if you needed to assign dose in 1978, you'd take 86 millirem per month times 12, times the correction factor of 2.9. Is that -- am I understanding that correctly?

DR. CHEW: Yes.

DR. BUCHANAN: Okay. Now, the questions I came up with was, the way I read the ER was, or the response to it was that this was for coworker dose. Now, do you plan on doing this for the monitored worker, too? If he has NTA film results in his file, this correction factor of 2.9 would apply to that worker also?

MR. ROLFES: Yes. Correction factor for NTA film would certainly be applied to the worker's recorded neutron dose in their file.

DR. BUCHANAN: And then you would use this also for unmonitored workers that

might have been exposed. You would use this 7-1, just like I said, you'd take the time period, time-correction factor to assign dose.

MR. ROLFES: Yes. That's correct.

DR. BUCHANAN: Okay. Because the way it's worded, it is slanted only towards coworker dose. Okay? Unmonitored -- uses a term unmonitored and coworker. It is not -- I did not read that it said that you would apply it to the already recorded dose. I assumed you would, but it's not written that way. Okay? I wanted to clarify that.

Okay. Now, originally, we were going to use the N/P method all the way up through 93, because 94 is when the better-quality TLD system came into existence, so we had good neutron data after that. But the NTA film, the early NTA film, and then the earlier TLDs from 78 to 93, according to TBD-6000, had large uncertainty and were too low a reading and had large uncertainties, so we

were going to apply the N/P value everything prior to 94 is the way TBD-6000 reads, how I read it, anyway.

Okay. Now, what are we going to do with the TLD readings from 78 to 93, if we're going to go back and use original readings? Because the NTA film correction factor wouldn't apply to them.

MR. ROLFES: Correct. The TLD from the 1970s forward, we can double-check to make sure, but it appears that the thermo luminescent dosimeter that they had in place in the 70s actually over-responded to some of the lower-energy neutrons incident at the site. I think it was about a factor of 5, so the individual worker's TLD neutron dose was actually a factor of 5 higher than what they truly were exposed to. So, to the best of my knowledge, and it should be -- I thought we had included an analysis of the responses of the types of badges to -- maybe it's in our Site Profile, but we think that they should

be okay. There may be some -- did you see something that concerned you?

DR. BUCHANAN: Well, according to TBD-6000, it said Pantex recommend -- TBD-6000 recommends the use of N/P values prior to 1994 because recorded neutron doses were too low and had large uncertainties using either NTA or TLD dosimetry prior to 1994. This is page 43 and 63 of TBD-6000. So, my question was, okay, we -- you made a recommendation for NTA film correction.

Now, we still have the TLDs from 78 to 93, which we weren't going to use originally because we didn't feel them reliable. What are we going to do about that? And if it is reliable, we need to know justification considering that TBD-6000 said it was unreliable.

MR. ROLFES: What we're proposing here is to use the data from the TLD time period from 78 through 2008, as we've broken down in this table. You know, for example,

we would assign coworker doses in the same time period. If there's an individual like a production technician or someone who's handling fissile materials, if they were not monitored for neutron doses and indicated that they were exposed to -- that they were a production technician or working in a vault or something, we would go ahead and assign a neutron coworker dose to them based on information that we proposed in this table here.

DR. BUCHANAN: Okay. But Figure 7-1, you would be applying the 2.9 correction factor only to the first block.

MR. ROLFES: That is correct.

DR. BUCHANAN: The 91.4.

MR. ROLFES: That's correct.

DR. BUCHANAN: Everything forward would be based for monitored or unmonitored, TLDs from 78 through 08, you would be applying the TLD reading in the worker's file or this number if he wasn't monitored, as is.

There would be no correction factor applied after 07.

MR. ROLFES: From dose reconstruction, I do want to clarify, because we do make corrections for quality factors based on neutron energies. During dose reconstruction, there would be applied --

DR. BUCHANAN: Yes, right. I understand.

MR. ROLFES: -- ICRP-60 correction factors and such.

DR. BUCHANAN: Right. But I'm talking about a neutron dosimetry correction factor would only apply to the first period on that chart.

MR. ROLFES: Correct. Because TLD neutron doses don't fade, the angular response is lower and things like that.

DR. BUCHANAN: Okay. I think that SC&A needs to look at that. We have -- like I say, we don't have the date that we need to look at. Rather, we agree that the TLD data

from 1978 forward is -- does not need any adjustment factor or is reasonably reliable.

MR. FITZGERALD: Yes. I disagree. This is sort of a new approach that we haven't had a chance to review yet. We'll look at it and if it resonates with what we've looked out and found, but I think we do need to validate it. For this piece, I think we should have an action to provide NIOSH with what we know, a written response as to what we established and found. And we're doing the same thing for Mound as we speak, so I think this deserves the same treatment, probably not as extensive, but certainly a response. So, we'll take the action to do a written response to this new proposal. It's a draft proposal that's contained in the NIOSH response.

CHAIRMAN CLAWSON: Okay.

MEMBER GRIFFON: Has anyone -- have you looked to -- have you compared at all the theoretical doses that you would get

from the coworker model in like 76-77, versus 78-79, when you have -- just given the Iowa warning. I think Jim will remember what I'm talking about. If you all of a sudden have -- you're making corrections and getting huge doses and then there's a big drop-off, you might want to consider that.

MR. ROLFES: That was slightly different because the early time period was based on source term versus actual dosimetry results, and that was like -- I think it was a cutoff of 1961 or somewhere around there, maybe.

MR. FITZGERALD: That's a good point.

MEMBER GRIFFON: It was different.

DR. NETON: Make sure we don't have this --

MR. FITZGERALD: We had similar issues with the back-extrapolating, but this approach uses the beta, so it's a different -- we have other issues -- the changes are --

MEMBER GRIFFON: Yes. I'm just looking at this for the first time.

MR. ROLFES: Yes. This is based upon actual film badge data from workers, rather than like a source term estimate model.

MEMBER GRIFFON: And the correction factors that you apply in that first period, 52 to 77 for the NTA film, it's different correction factors depending on weapon system worked on, or is it --

MR. ROLFES: No, no, no. It's independent of that. What we're doing here is, basically, making correction factors for the time in between the badge exposure and the film badge being read to determine whether there's any fading of the neutron tracks. I guess, it's --

MEMBER GRIFFON: Right. I guess, the one thing I was thinking of was the spectra. Is the spectrum consistent across all weapons? I'm not that --

MR. ROLFES: You know, there are certainly going to be factors that affect it, the distance from a source.

MEMBER GRIFFON: I mean, you're making a claim here that --

MR. ROLFES: The types of materials.

MEMBER GRIFFON: -- the spectrum is uniform; it's the same.

MR. ROLFES: No, no, no, no. I'm not saying that at all. So, based --

MEMBER GRIFFON: What are you saying? I'm sorry. I'm trying to understand.

MR. ROLFES: What we've done is made correction factors for fading, for the threshold energy.

MEMBER GRIFFON: Right.

MR. ROLFES: Basically, we have an attachment of our analysis for the corrections to NTA film and it's --

MEMBER GRIFFON: All right. I'll

have to look at the Appendix, too. I apologize.

MR. ROLFES: It's at the end of this response here. It's attachment -- or Appendix A, excuse me, and it's titled, NTA Film Response To Weapons-Grade Plutonium Metal.

MEMBER GRIFFON: Okay.

MR. ROLFES: So, we have our bases in there and such.

MEMBER GRIFFON: I won't bog us down. I'll look at the --

MR. ROLFES: Okay.

DR. CHEW: I can answer your question. The spectrum coming out in this is pretty much the same, but then as you put things around it, which is -- does that make sense to you?

MEMBER GRIFFON: Right. But the portion --

DR. CHEW: If you start to assemble --

MEMBER GRIFFON: Right.

DR. CHEW: And the distance the person -- that's --

MEMBER GRIFFON: But doesn't that affect the badge, and what you're reading? I mean, that's what we're concerned about, is the NTA film badge on the person who's going to be working with these other things in the environment.

DR. CHEW: If you look at the --

MEMBER GRIFFON: Okay.

DR. CHEW: -- response, it explains --

MR. ROLFES: It's not like a -- it's a distribution of spectra that are present. It's not all, you know, one that may be neutrons, for example.

MEMBER GRIFFON: All right. I'll look at it. Thank you.

DR. BUCHANAN: I did a couple of other clarification points I'd like to bring up while we're on this subject, and that is

the angular response of the NTA film. And this is taking the adjustment factor same as taken from Mound, the fading adjustment factor, and the ratio, the lost dose ratio all from Mound, same as applied to Mound, which is still in debate. And here we have a study that was done in 1965 by Katherine on the angular response NTA film, and this is a frontal exposure, this factor 1.33. Have you looked at Pantex, and I'm not that familiar with the actual physical layout of the workers, and the weapons, and stuff, but if you had, that's an AP exposure, frontal AP exposure. But if you had PA exposure from the rear, this would not apply. In fact, it could be lost dose if it was from the rear. So, has there been any look at, or can you say with early certainty that there wasn't rear exposure to neutrons at Pantex? Was the layout such that it wouldn't occur, or is it possibility that there would be significant amount, not a negligible amount of rear

exposure from neutrons at Pantex?

MR. ROLFES: The only situation where that might apply would be in vaults where large amounts of materials are stored. But typical operation, and that would be an area of higher dose rate, also, which an individual wouldn't spend more than a given number of hours per week, or per month, and because of the dose rate in the area. As far as operations in the cells, most of the work is done at waist level in front of the individual. There could be other components stationed around the room, or in storage around the room where it's possible that some level of neutron dose could be received from those. However, the distance separating the workers is typically going to minimize any potential exposure. But the most significant source of exposure would be the operation being conducted right in front of them at that time.

DR. BUCHANAN: Now, this morning

someone did mention, and I forget who it was on what subject, that the worker could be surrounded with 10, or 12, or 15 units. And I assume this would be more than just in front of them.

MR. FITZGERALD: Sarah.

CHAIRMAN CLAWSON: Sarah, and it was also in some of the interviews that the theory of having one out a time -- so you're back saying you could have them to your back really. It just depends on where they're at.

DR. CHEW: I don't want to get into that discussion. There are -- what Sarah was talking about, there are bays and cells. Okay? The cells is where the actual units are being assembled. And the numbers of the bays and cells are significantly different. How can I say this? So, if you really look at how we responded to the angular response of the NTA, we did look at the Katherine data, which is -- and took what I would consider a multiplicative correction

to the track here, and 0.75 would compensate for the response. Your issue is that anything bouncing off the wall there --

DR. BUCHANAN: No, my issue is mainly if there's weapons behind, and if it's -- if a person is in a room with multiple weapons around, then the angular response function wouldn't be correct, if 99 percent of the time he's working with them in front of him, or on an assembly line, or something, then I'd say this is reasonable. And I don't want to get down to the Site Profile technical issues, I just say one of the major cutoffs would be where you'd have a dose that you wouldn't be seeing at all, or very little of, and this wouldn't correct for it, would be if you had significant exposure from the rear. This is just an issue I want to bring up that had not been --

DR. CHEW: During assembly while they're in the cell, as you said, the person is working with them in the front, there is a

standoff distance between where the nearest unit can be from him or her. And I just don't know that off the top of my head, so I would say the contribution for that particular unit is going to be low. I can't quantify what it is, but it is not like it's directly behind them, because that's not allowed.

MS. RAY: And I know that things were quite different, I'm sorry to interrupt, but things were quite different in early years, and you would have one or two people working on weapons, on a weapon in the center. They were going to be doing the same thing to 10 or 12 other weapons. So, for example, in a cell, in a round room there could have been 10 or 12 other weapons, and you could, even at that time, as I understand it -- you could even have mixed programs, which I know is something that has not been considered, because that is not today's activity. And that seems to be the primary

emphasis that NIOSH has looked at, is the way things are today. But the ACKC dosimeters were quite different back then, so I think what this gentleman is saying, and, again, I'm not a scientist, I'm not a mathematician, but I think this something very important. They did not have any kind of dosimetry looking at any exposures they were receiving from the back. And there were no criteria then that I am aware of from talking to many, many production individuals that said how close they could be to a weapon.

DR. BUCHANAN: And what time period would you say this applies to?

MS. RAY: I think it would have continued well into the `80s. So, it would have been all the way as far back as you could go, and it stopped some point in the `80s, probably the late `80s. And I'm going to add, my husband, Don Ray, is with me, and he was a production technician during this time frame, so I am confirming this time

frame with him.

DR. BUCHANAN: Okay. Thank you.

MR. ROLFES: Okay. This is a concern we also heard about down at Pantex when we had interviewed workers, as well. And that was one of the things that came out of the meetings that we had with the workers. And, in addition to that, there were some other concerns about lead apron usage, as well, for people that were working on assembly/disassembly operations, vault work, et cetera. And we had actually gone back and made corrections to our Site Profile based on some of the input we had received from the workers at that time.

The one that comes to mind, specifically, is the application of a correction factor for accounting for lead apron usage, and I don't think we specific -- we did discuss the issue about having multiple units in a room, and work being done, components being stored in areas that

could have contributed to higher dose rates and things. If we had a concern about the neutron doses, we would typically see elevated photon doses associated with any work like that, as well. But I think we can go back and maybe look at some of our technical assumptions to see if any change would be required, and maybe provide an example of -- that you know a generic dose rate for somebody working on something directly in front of them versus material stored 20 feet away from them.

MS. RAY: If I can insert again, it would be very important to be sure that you are looking at the right age of weapons.

DR. BUCHANAN: Okay. Now, two other points I'd like to bring up was that the fading, and the threshold effect are taken, like I say -- we have this ongoing discussion with Mound, using -- what fading factor to use. NIOSH proposes a 9 percent per week from a value taken from Mound's

data. Mound also has in there a 33 percent per week, and a 56 percent for two weeks in a published document. So, we believe that choosing the 9, just -- it's the same issue we had at 9 on fading, which value do you use for NTA film fading? The other issue that's parallel to Mound is the amount of neutron dose below the .5 MeV threshold. And, in this case, NIOSH has proposed to use the MCNP, the neutron modeling method, to determine the amount of neutron dose that would be missed, and assign that accordingly. And that's in Table 1 of their response.

And this is somewhat compatible, just using a different type of shielding, same situation, same neutron modeling program, and stuff, that is at Mound. So, I'd like the Board to be aware that what happens at Mound, probably what we decide at Mound, whether we accept that model or not, and SC&A is presently working on that, to have a White Paper out on that, probably will

affect a number of other sites. So, they're using the same concept here, where it determines the amount of missed dose compared to the thickness, and position, and that sort of thing. Only thing at Mound is that you don't have quite as many -- you have a more controlled environment. You have less energy spread, and situations geometry than you might have at Mound, so it's kind of a narrowed down concept for Pantex compared to Mound. So, I just wanted to make the Board aware that this is a carryover from Mound, and probably what we decide at Mound will apply to this, too.

MR. ROLFES: Mound is slightly different, though.

DR. BUCHANAN: Slightly different, but the concept is the same.

MR. ROLFES: You've got different compounds, plutonium, tetra fluoride, and things with a different neutron energy spectrum versus weapons grade plutonium

metal. I mean, it's a little bit different.

DR. BUCHANAN: Yes, like I say, Mound has a wide variety, Pantex panels it down and has a narrow application of the same process.

DR. CHEW: Ron, you looked at the fading we actually used, and our correction factor was 36 percent, and not the 9 --

DR. BUCHANAN: Well, yes, it's based on 9 percent fading per week, though.

DR. CHEW: But to develop the correction factor, though, we used the monthly change.

DR. BUCHANAN: Use a monthly exchange, 9 percent per week. Okay. And what I'm saying is, if we use the 33 percent per week, and a monthly exchange, it would be a lot larger correction factor.

DR. CHEW: Okay. But what's the basis of 36 percent per week, or 33 percent per week?

DR. BUCHANAN: Well, that -- it's

two published Mound documents at the Mound Site that they did. And the 9 percent comes from an unpublished Mound document, around the same period, 1966 or that area. So, 9 percent comes from Mound, and the 33 percent comes from Mound, 56 percent comes from Mound. And Mound's health supervisor there had theirs adjusted using the 33 percent per week until they synchronized their exposure to calibration cycle. So, I say, if we're taking data from Mound and applying it to Pantex, why are we using 9 percent, instead of 33 percent?

CHAIRMAN CLAWSON: And this issue, anything -- SC&A is going to produce a White Paper on this?

MR. FITZGERALD: On this.

CHAIRMAN CLAWSON: Okay.

DR. BEHLING: Brad, can I make a comment here, or raise a question?

CHAIRMAN CLAWSON: Sure, Hans.

DR. BEHLING: One of the things

that has intrigued me is Table 6-1 in the original TBD that cites by year collective neutron dose and collective gamma dose. And something strikes me for the year 1960 and even 1961. If you look at the collective neutron dose, and the collective gamma dose for those two years, for the first year, 1960, you have a total of 9.2 person rem of neutron dose, and you only have 1.15 person rem for collective gamma dose. That translates to a neutron-gamma ratio of 8. For the next year, `61, the collective neutron dose is 6.23, and the collective gamma dose is 2.51 person rem, and that is somewhat reduced to 2.5 as the neutron/photon ratio. And then, thereafter, for all the years thereafter, it drops off precipitously. And, of course, those years we were using NTA film, which certainly under-estimates the true neutron dose. So, when you have a neutron/photon ratio for 1960 of 8, my question is, was there something unique

during that has to, or should be looked at? Was the work involved different from subsequent years? Were there different types of materials handled that should generate such a high neutron/photon ratio? As I said, since this was an area or time frame when NTA film was used, chances are the true neutron/photon ratio might have been much higher. So, it's just a question that I have, that has intrigued me. I've had a note written on the side of Table 6-1 for a long time, and I don't think I ever raised it.

MR. ROLFES: Thanks, Hans. So, do you want us to return to using neutron/photon ratios now, or do you --

DR. BEHLING: No, no, no, no, no. I'm just saying that something, perhaps, unique happened during those two years that would justify the unusual high neutron/photo ratio. As I said, in Table 6-1, it's not given as a neutron/photon -- it just gives collective doses of neutron, and collective

doses of photon, and from that you can, obviously, go a simple -- derive a simple ratio between neutron/photon ratio, and it's very, very different for those two years. And I'm just questioning if there was something unique that happened during those two years that was different from all previous, and all subsequent years that may require special attention.

CHAIRMAN CLAWSON: We could have a special weapon, or something that came in during that time period.

MR. ROLFES: That's very possible. Anything is possible, and the dosimetry that we have is -- we have that dosimetry information, so that information is actually used for worker dose reconstruction.

CHAIRMAN CLAWSON: Okay. So, SC&A's got their task for this one. We're going to just proceed on, Joe.

MR. FITZGERALD: All right. Issue 8, which is a completeness interpretation.

Now, this goes back to what we discussed pretty much earlier today. I really don't want to spend a lot of time on it, because it covers familiar ground. Again, what that one basically says is that the specific contributions of individual weapon systems were such that maybe the source terms that we're concerned about being enveloped or bounded by this back-extrapolation, but I think since we've already agreed to earlier that NIOSH would provide more details and whatnot to justify the back-extrapolation, I would assume part of that would be to show how that's going to envelope or bound all the different types of sources that you're dealing with historically. And that's what we said earlier, you have a long history, many different systems presenting, perhaps, different types of source terms and whatnot, both external and internal, and the notion is that whatever is being proposed is going to envelope that history, regardless of the

different sources. And, again, certain systems have certain histories, which I can't get into, but certain presented an exposure potential that would vary. And that's not to change the need to go look at plutonium, thorium, and show how one is going to apply this extrapolation, but it's just sort of another cautionary note that we need to be aware of these differences, and make sure that we understand what the different systems may have provided. And as part of what we would do, I think, would be to -- and we did not want to, nor was it right to do it as part of the Site Profile Review, but certainly wanted to take a look at some of the systems that were, perhaps, more of concern from an exposure standpoint for whatever reason, and just as a validation step, just make sure that's going to be enveloped, or covered by the approach that NIOSH is proposing, so a bit of a validation from that standpoint.

MR. KATZ: So, is that something SC&A -- is this going to take a group meeting in Germantown, or is that something that SC&A wants to address independently?

MR. FITZGERALD: Well, I think we have to do the spade work necessary to make a case to ourselves that it looks like there's an issue, or not. I mean, it's sort of one of these things that understanding the difficulties of getting that kind of information, and probing that information, it's not something you would do lightly, not, certainly, as part of a Site Profile, but in concert with what I think was proposed this morning. We would, maybe, take a look at a couple of the systems that give us most concern, and try to at least get enough information where when we have this discussion later, maybe a secure discussion, who knows, but we'll be able to talk intelligently about well, we understand where you're coming from, but this was 1960's

program, and we can show you why we may have some concerns about using this data back, and covering this, because this particular system may have presented a hazard, an exposure potential that would be arguable that it wouldn't be applicable. So, that's the only thing I would propose.

MR. KATZ: Yes. And my only question about that is for efficiency sake, given the difficulty you just raised of going in and digging into that information, whether it makes sense to do that all at once, and have that conversation. If you do it step-wise, I'm just concerned about how much time it --

MR. FITZGERALD: No. I have no problem doing it in concert. We did that at Los Alamos not long ago, and I understand how hard it is to get to the information. If it's possible to do it jointly, I'll propose to do it jointly.

MR. KATZ: In that case it might

make sense, too, to have at least a couple of Board Members participate in that, as well.

MR. FITZGERALD: No, I think any time we can time this so that it's one trip, one access point, it's going to be much better. And I doubt they would host us much more than that, anyway. So, yes, I think that would be useful. I think that maybe the timing would be such that there would be more than just one reason to be there to look and stuff, maybe two or three different reasons, that would be one committee.

CHAIRMAN CLAWSON: And we've got some business coming up that I'm hoping for one of our visits, the tour that's supposed to be coming up that maybe we could make that --

MR. FITZGERALD: I guess this is subsumed by a lot of what we talked about. I just don't want to spend a lot of time talking about these validation points, and whether the source terms are all covered. I

think that's sort of part and parcel to this look into whether you can apply contemporary information retroactively. And I think that's one of the issue, can you, in fact, envelope these systems if they have exposure potentials that may be of particular concern, and maybe you can't.

If I can move on to issue 9. This one I think we just need to spend some time with your database of 100 plus incidents, as well as reflect on whether or not the historic incident system was one where we feel pretty confident that this collection that's on the O: drive represents a pretty good representation of what happened.

I said earlier, one of our concerns is whether people, in fact, recorded what was going on, what was a incident quotation, close rotation back in the `60s versus now. I mean, one thing that struck us right after the Tiger Team, the number of reported instances at Pantex just went up,

skyrocketed, you know. They were reporting hundreds per year versus a handful before that, so you sort of ask yourself well, okay, clearly, people were -- this wasn't just Pantex.

DR. CHEW: It happened across the complex.

MR. FITZGERALD: It happened across the complex, right.

DR. CHEW: Everybody overreacted.

MR. FITZGERALD: Everybody overreacted, and it sort of begs the question. Not a pleasant memory. Right. We all lived through it.

DR. CHEW: We were trying to outdo each other how many numbers we --

MR. FITZGERALD: But that just sort of raises the question about do we have a pretty good picture of what these events were, these incidents were, because we put a lot on them. I mean, I think we're claiming it's a venture into bioassay programs, so the

issue is as long as there was a good-faith program to bioassay workers, if there was a release, or a potential, then maybe this issue gets better, but I think we want to start with the events, how were they handled, and can we correlate that, to some extent, with bioassays, and some kind of response, even if the response is it wasn't a real release, and, therefore, there was no bioassay, just finding some accountability just to track that down that would give a little bit more confidence in the early days.

CHAIRMAN CLAWSON: Well, in the early days, actually, what triggered an event was that the classification of something going outside of the containment, the facility, what were they considering it to be? That's still questionable, because I found it very interesting that we have three or four incidents, and as Paula said, went to 100.

MR. KATZ: I thought this was part

of what Mark said, that they were going to substantiate when they beef up their bases. Is that correct, is that what you're saying, Joe?

MR. FITZGERALD: Yes, that's what I'm saying.

MR. KATZ: Okay.

MR. FITZGERALD: A lot of what we talked about this morning really does subsume some of these issues, because I think it's event-driven, certainly one of the responses would be to -- and you cite in your response over 100 incident reports. And, recognize, two years ago when we finished the Site Profile, we didn't have access to all of those incident reports, so there's a lot more now. So, I think there are significant chunks now, so I think it would be best to -- for us, as an action, to revisit what's on file, and whatever could be identified as additional records. Maybe there aren't any additional records. And then, certainly,

from the standpoint of what this tasking was this morning, that you would, certainly, look to completeness of the incident database as an argument that you were confident that you have all the incidents and bioassays were appropriate, and use that event-driven program as a pretty solid way of responding.

MEMBER BEACH: Well, don't we need to go with some type of a tasking for an SEC Evaluation Report, also?

MR. FITZGERALD: Well, I think there's a broader thing that Mark's very familiar with. As part of every SEC review, we look at the -- and the Board, and the Work Group looks at the adequacy, completeness, and integrity of the data itself. We don't do that on Site Profile, but as part of an SEC, we, as a baseline, do that. We have not done that. One thing, there isn't a whole lot of data for Pantex. It doesn't really begin until latter years. But this -- the information is available on incidents. The

bioassay records we do have, the latter years, and the external dosimetry, even though we've talked about different methods of enveloping or upper bounding these things, we still have the responsibility that we do on every SEC, which is to look at the database, and get back to the Work Group on its completeness, adequacy, and integrity. And the integrity speaks to the issue we discussed earlier, which was, was there destruction of records? What's the implication? Do we have any corroboration about that? What records were affected? I mean, I think all of that is a routine tasking that SC&A takes to the Work Group, which is to come back and report on that. And that's something that, certainly --we haven't discussed it, because we've dived in on the specifics, but that's a broader thing that the Work Group may want to consider.

CHAIRMAN CLAWSON: I think that we're going to have to -- and I was going to

get with Ted before we end this to make sure that we've tasked you right, because when Pantex originally started out, it was a Site Profile issue that we got into, and we actually have turned into an SEC now. And we really have not done the SEC issues yet, so this is something we're going to have to, before we end our meeting and stuff, make sure that we've got SC&A tasked correctly to be able to proceed on with that, make sure that we're in the right position.

MR. FITZGERALD: And just to clarify, I think Mark and his team would be looking at how this could be bolstered for its methods process. We would be looking at the completeness and accuracy of the records, including incident reports, which is a slightly different angle. But, nonetheless, they do dovetail and contribute to each other.

CHAIRMAN CLAWSON: Okay.

MR. FITZGERALD: So, with that

broader tasking, I think it covers most of the rest of them. So, the only thing I would want to address is number 10. This was mentioned by Sarah earlier. It certainly is a facet of Pantex operations, that we were concerned about, and, certainly, NIOSH has spent some time thinking about, which is the firing sites and the burning of the depleted uranium. And this whole process of hydro shots done at other sites, but to do some testing on the high explosives, and to get some information analysis on the materials. It's materials research in a lot of respects. And I'm going to let you summarize your position, because, again, I think you got into it earlier, and just for the benefit of Sarah, and Lars, and everybody.

MR. ROLFES: Sure. I don't know exactly what we have in here. I didn't look back at our responses, but off the top of my head, what I can tell you, there were historical efforts made to determine how much

uranium was vaporized, and basically blown off site versus how much was collected and disposed of as radiologic waste. But we do have some air sampling results and analyses, as well as some bioassay data for the workers that were at that area. You know, it's certainly not as much data as we'd like to have, but we do have other information that will allow us to estimate worker intakes, such as contamination levels in the dirt, and air sampling data.

Now, there's also -- there's a few different firing sites, and, basically, they were doing open air testing in the earlier time period, and then went over to a contained test area. And, really, they had the same type of operation going on in the contained area, so they were, basically, maintaining all their materials inside of this containment vessel. And, really, it's those workers who were involved in the containment vessel area. Those are the

workers that actually have more of the bioassay data, and also have a higher potential for exposure. So, when we're generating uranium dust, this could cover a larger area. The potential for exposures are much lower, and, basically, they're going up into the air and blowing. If you've been to Amarillo, you know how hard and fast the wind blows down there. But the people at the firing sites could have gotten uranium contamination on their hands. They sometimes used gloves, sometimes didn't, if they were looking for pieces in the dirt, and things. But what we have used, basically, is the air sampling data, and developed an inhalation dose model for individuals that went into the site, and would have been involved in re-entry, and picking up pieces, and things like that.

Let's see. There's also some other. I've mentioned previously, they had hired a drone, a person to come in and fly a

plane through the cloud to sample the cloud, to see how much uranium was in the air, et cetera. That's what we have. I believe what we've done to generate our intakes was to -- let' see. I want to make sure before I say it, but I believe -- yes, we've taken the 95th percentile of the measured air concentration of 24 picocuries per cubic meter. Let's see.

MR. FITZGERALD: 1961 on.

MR. ROLFES: Yes, it was the 1960s outside air concentrations, because I think those were the highest air concentrations that we observed.

MR. FITZGERALD: Yes. This may be more of a clarification issue. As part of the Site Profile, we did a sampling and review of the data, and I think we had a discrepancy with the `59-61 data being different or higher than the `60s data. And I think we can provide that data, if you don't have it. But I just want to make sure that the distribution, we're talking about

the same distribution, different time periods of the firing. So, this is firing site 4.

MR. ROLFES: Okay. I didn't think that it was operational until `61. That's why the --

MR. FITZGERALD: Well, I'm just wondering, we have data that shows a difference.

MR. ROLFES: Okay.

MR. FITZGERALD: I'm not sure why there's a difference.

MR. ROLFES: Yes, I'd be interested in taking a look at that.

MR. FITZGERALD: Okay. I think, again, that's a clarification issue that we have on some of those things.

MR. ROLFES: Okay.

MR. FITZGERALD: Not probably an SEC issue, but a question that came from the profile. I think we can resolve that, so we'll take the action to clarify that to NIOSH, with specific information, and bring

that back to the Work Group as a resolved issue.

CHAIRMAN CLAWSON: Okay.

MR. FITZGERALD: Because I don't see it as much of a dose reconstruction issue, as one of just making sure that the analysis is a bounding analysis, with the data that's available.

CHAIRMAN CLAWSON: So, you're going to -- this is an SC&A --

MR. FITZGERALD: Yes. I think there are some specific questions, but I would characterize them as clarification questions. I don't want to -- I don't think this is a fundamental SEC issue, but just ones that we can clarify, and we can take off the table. And I'll take the task to define that and send it over, maybe as a memo, or something.

CHAIRMAN CLAWSON: Okay. So, SC&A is on that issue.

MR. FITZGERALD: Yes.

CHAIRMAN CLAWSON: Okay.

MR. FITZGERALD: Now, beyond the -- these are the issues that we came forward with on the original profile three years ago. The other issues are ones where we have gone through, as we usually do, and have addressed each and every one of the petitioner issues, just to see if we could find a corresponding response in the Evaluation Report. And if we can't find something that's specifically responsive to the issue, we put it in, just to make sure that there's an opportunity to bring that information back to the table. So, here on out, the sort of -- we didn't originate these issues. These issues are right from the petition. And I guess my question is, do you want to take a break before we do that?

CHAIRMAN CLAWSON: Let's take a 15-minute break.

MR. FITZGERALD: Some of these are repeats what we've already covered.

CHAIRMAN CLAWSON: So, let's take a recess.

MR. KATZ: So, 20 after?

CHAIRMAN CLAWSON: That'll be fine.

MR. KATZ: So, 20 after 3, we'll reconvene.

(Whereupon, the above-entitled matter went off the record at 3:08 p.m., and resumed at 3:20 p.m.)

MR. KATZ: This is the Pantex Working Group. We're just reconvening after a short break.

MR. FITZGERALD: This is Joe. As I said right before the break, that finishes our Site Profile based SEC relevant issue, and what we wanted to outline is what we usually do, which is to identify the petitioner issues, issues that were derived from the petition, itself, that we want to see a corresponding response in the Evaluation Report. And where we didn't, we

provided some analysis in our matrix on those issues.

Issue 11 on our list was the question of most highly exposed worker monitor, and we conveyed the petitioner's issue that no evidence was presented in the ER that early workers were, in fact, badged the same as later ones. And the assumption was that the most highly exposed were badged, in our view, doesn't provide enough basis for the coworker model used. And we can go into more details. Again, a study by Strom in 2004, a coworker study, using 1994-2000 data is cited. But, again, I think we get at the same issues we did before about whether you can use this modern, I won't say modern, but more contemporary data, and use it as a back-extrapolation. But in a larger sense, I think the broader tasking to look at data adequacy, accuracy, and integrity, that broader baseline review that we do would address this issue, and some of the other

issues that we're going to get into. So, I just want to sort of make it clear to the Work Group and the petitioners that yes, we do this for every SEC. And, in this case, we would look at the database, would examine questions about who was monitored, and how that represented from the coworker standpoint the most highly exposed.

Issue 12 is accuracy of data. And there, this is a question of acceptance of early film dosimetry as being reliable, is a question that figured in the petitioner's comments. And we feel that's a legitimate issue to look at, as we examine the adequacy and completeness of the database. So, that, again, would be a subset of what we look at.

One question I do have is on the Plato study, which I've seen a couple of times now. This was done in `78-79 data. Is that on the O: drive? I think we've been looking for that, and I don't know if we found it yet.

MR. ROLFES: I see that we've referenced it, and mentioned the dosimeter testing that was done at the University of Michigan.

MR. FITZGERALD: Right.

MR. ROLFES: I'll have to take a look at and see if we've got that, a reference to Plato 1979.

MR. FITZGERALD: Yes, if you find the reference, we thought maybe it was on the O: drive, maybe we were looking in the wrong place, but that would be one thing on that one item that if we're going to look at this completeness question, that would be a useful study to look at.

MR. ROLFES: Okay.

MR. FITZGERALD: The other issue, wearing of badges, again, whether one has an issue with assigning LOD/2 to workers not wearing badges. The reason we kind of raised this question, this came up at NTS, is that we want to be very careful about the issue of

whether workers were wearing badges, and how we treat that issue, and whether it's big issue, or an isolated issue. Again, we would look at that in the context -- this is no different than we've looked at any other site, look at that in the context of Pantex.

MR. ROLFES: Yes, there's -- we'll write that down as an action item, I guess, to get the reference, the Plato reference on -

MR. FITZGERALD: Yes. It's up on the O: drive, maybe SRDB --

MR. ROLFES: Regarding badging, I do recall seeing a couple of references that we have on our Site Research Database regarding audits that were actually done on the site to determine whether individuals were wearing their badges, and such.

MR. FITZGERALD: Right.

MR. ROLFES: And there were a good number of people that were not wearing them in this particular time period, 1969.

MR. FITZGERALD: Right.

MR. ROLFES: And they have made some corrections, and reinformed employees that they needed to be worn, and such. So, those would be helpful to you, I think --

MR. FITZGERALD: Yes. We looked at the `69 study, and that gives us some concern that with a relatively larger group that was not. But if it was corrected, it might have been an isolated one or two-year thing, in which case, it's less an issue, and can be done with missing dose, LOD/2, but we don't want be too rash in our judgment, if we've had the same issue at other sites. And once we look into it, it turns out a little differently.

MS. RAY: Can I offer some comments on that? The timing on the wearing of the dosimeters was one of the issues brought out by the Tiger Team report, and also something that has come to my attention, as I've talked with other workers. And I

know for a fact that only one department, I can't tell you which one it was, there was Departments X, Y, and Z on the line, and only one of those departments which included what was then assembly operators, and inspectors, those were the only people that had dosimeters. So, even in looking at some of the numbers, I find it kind of odd, because I know material handlers, transportation folks, quality control, not quality control technicians, but warehouse and protection workers, there was a long period of time when they did not have any type of monitoring, so I just wanted to point that out, as far as dosimetry.

MR. FITZGERALD: Well, thank you, Sarah. That's the reason why we want to do a broader review, and hit the specific points raised in the petition, as well as other issues that we're going to look at, which is the integrity of the information collected, and whether, in fact -- which workers were

monitored when. Some of this -- a lot of this is in the TBD, but there's still questions that we've raised, and you've raised some questions, too. So, we want to certainly provide that back to the Work Group in a complete piece.

MS. RAY: Yes, and looking at red aprons, and I know it's probably not been an issue, but I see it noted under item 12. And that was not a standard practice. It was something that had to be requested. There was no training on it. The lead aprons only covered the front, many of the people, production source and warehouse people who had to do the inventories in the pit vaults had to climb around on them, and they were exposed on the back. They were in there for many hours. You know, I think all of that needs to be included. But, again, the wearing of the dosimeter was the dosimeter, under the lead apron, were the lead aprons even used? You know, I think it possibly may

be a broader scope than it appears on the papers.

MR. FITZGERALD: Yes, we did look at lead aprons. But, again, we haven't had a chance to dive into the database more than we have. So, we certainly want to look at that, as well.

MR. ROLFES: Sarah, this is Mark Rolfes, and that was one of the key issues I felt that came out of the Worker Outreach program that NIOSH has. We, subsequently, after we had a couple of meetings down offsite with some of the production technicians of the Metal Trades Council, we had actually discussed about lead apron usage, and that was one of their concerns, as well. And we actually had updated our Site Profile to come up with an approach to assign a claim in favorable correction factor for whether an individual did or did not wear the lead apron. And it's based upon the type of cancer diagnosis. It, basically, goes

through a flowchart in our Site Profile to insure that we're assigning the more claim in favorable of two doses to the individual based upon the facts of their case, and whether or not they could have worn an apron.

MR. FITZGERALD: And that gets into badge placement relative to the apron, as well.

MS. RAY: I have a layman's comment. You have to have a good number to start from before you can correct that number. And I think one of our premises at this point is that we don't feel like it's possible to start -- have that good starting point, or that good starting number based on the information being used.

MR. FITZGERALD: And, certainly, another issue under issue 13, which sort of echoes what Sarah just said. We're looking at the numbers of workers that were actually monitored in certain time periods, and I think it's acknowledged that `52-57 few

workers were monitored, and that was mostly radiographers. And then certainly the numbers got higher, but the question of exactly how many workers were being monitored, who was being monitored, and whether the data, itself, is adequate is part and parcel of what we're looking at in this overall review of data accuracy.

So, really, the last grouping of issues, I think all fall into the data, its completeness, the adequacy of the information collected, the integrity of the data. So, I think, again, SC&A will take the broader and more typical as our charter from the Work Group to examine that, and report back in a documented way. That would also include incidents, so there's a -- the usual things that we look at, have looked at in the past.

CHAIRMAN CLAWSON: So --

MR. FITZGERALD: That would complete -- the program is the health physics program that you've already discussed,

looking back in time. How rigorous and supportable was the rad protection program over the history of the plant? I think you've talked about some concerns.

Like I said, there was three or four variables that I was most concerned about in terms of back-extrapolating. And one of them was the rigor of the rad control program, the numbers of health physicists, we talked about that. The procedures and requirements, to what extent they were implemented. So, that last item on the page speaks that one variable. And, of course, the other ones are operations and dosimetry. There's just -- I think we've already talked about this morning, but these are the questions that I think need to be addressed, if you've going to back-extrapolate, I think it's a challenge, and that's one of them, which is the efficacy of the health physics program.

CHAIRMAN CLAWSON: Okay. The one

that I see here, 14, subcontractor, temp records, and so forth like that.

MR. FITZGERALD: Right. Same difference.

CHAIRMAN CLAWSON: The same thing we get into --

MR. FITZGERALD: We look at the completeness of the records that includes whether or not records were maintained for subcontractors. There's an issue about Mound workers participating at the Nevada Test Site, at maybe a couple of Broken Arrow situations. Those are situations where we just want to make sure that the record is complete, and that dose information or monitoring information came back with the worker, and was reported in the file. So, I mean it all sort of -- without getting into all the nooks and crannies, it all gets down to whether the body of records maintained are complete, adequate, and have integrity, meaning that they're not altered, or there's

a large group of them missing. I think that's the baseline that the Work Groups would operate from, because then the methods don't -- if the records are not accurate, or not complete. So, I think that's what Sarah was saying earlier. This is to make sure that's the case before you talk about using that data as methods --

CHAIRMAN CLAWSON: And I understand that. We've got into that.

MR. ROLFES: I wanted to point out a couple of clarifications. You know, for example, with Project Crested Ice, there were individuals from Pantex that had gone to Thule, Greenland to basically assist with cleanup operations. That was a military operation with DOE participation, as well. And we did have a couple of individuals that have participated from Pantex in those operations, and had subsequently provided bioassay results. So, that information is present in -- there's an incident report,

obviously, for that occurrence. And then we also have bioassay data for the individuals.

The NTS exposures, I couldn't say that all NTS exposures for individuals that left Amarillo from Pantex Plant that traveled, you know, some workers had gone, and were individuals that participated in the test program at NTS. That's something that we would have to request separately from NTS, because it's a separate covered facility. And during the time period of April of 1957 forward, anybody that entered the Nevada Test Site would have been an issued a Nevada Test Site dosimeter, or a film badge at that time. So, there's -- I, actually, just was speaking with a worker about this, that he had indicated he had gone to NTS, and so we wanted to make sure that he had gotten his dosimetry records, or we had gotten his dosimetry records from Nevada Test Site work.

MR. FITZGERALD: Yes, we may just be crossing the T with you, because, again, I

think as part of due diligence on looking at this, we, typically, walk that down, as you have. And if you have already done so, then I think the issue goes away. But there's a number of just questions like that, that we just go through and ask the questions, and make sure the answers are all there.

MR. KATZ: Given the overlap, though, it may make sense at some point in your process to contact Mark, and see that you don't do double work here.

MR. FITZGERALD: The process I envision would be to start with -- again, I'll re-emphasize, we have only done the digging to support the Site Profile Review, which was three years ago. We have not -- we've looked at some of the information that's on file from the SEC work that Mark and his team have done over the last couple of years, but we really haven't dug into it, so with this Work Group meeting, I think we're going to start digging into it, but we

will certainly start with what's on file and what Mark has done, your team has done already as a baseline, and then see what else we might want to do. So, yes, by all means.

MR. KATZ: Yes. No, all I was saying is that it sounds like Mark is going to be doing some of this T crossing now, if you don't have it in front of you yet, but --

MR. FITZGERALD: Well, I think part of the purpose of the meeting is just to tell you, this is where we're going, and you're telling me where you've been, which is great, because that's where I want to start. And anything you can do to limit what I have to do, that's great, because if you've already run down the NTS issue, the Greenland issue, those are things I can cross off my list and just say okay, that's all done.

CHAIRMAN CLAWSON: Well, basically, we've gone through the matrix and everything else like that. We made job

assignments. I think we're going to wait until the tasking to make sure -- I just want to make sure, Ted, that I've got the tasking right, because when we first started into this, they did a Site Profile, then we kind of did a while you're doing your Site Profile, why don't you separate out what the SEC issues are. Now we're into the SEC, and I want to make sure that we've tasked them right. And I expect that we'll be able to -- we can do that at the end of this, but what I would like to do is give Lars, and Sarah an opportunity, if they'd like to speak, and address any concerns that they might have.

MS. RYAN: Lars had another meeting, so I'm the only one that's left on the phone, I believe.

CHAIRMAN CLAWSON: Okay, Sarah. I just wanted to give you some time to be able to -- so that we can adequately address the concerns that you have with this Site Profile, and so forth. I know that you've

weighed in, but I just want to make sure you have the opportunity to be able to speak your piece.

MR. KATZ: Sarah, you've submitted a letter following Shel's letter to the Work Group. So, I guess one of the things Brad is asking is to be sure that if there are matters that the Work Group hasn't addressed in that letter you submitted, is that clear to you? Do you think that's been pretty well covered in this meeting so far?

MS. RAY: I think I -- you know, I point out some of the things that Joe very nicely described in his introduction today. He brought out the issues that we've had with taking today's information and trying to backfit it to yesterday. That's been an ongoing problem, as far as I was concerned, because things are so different now. But some of the things that I've had problems with were the basic, what appeared to me to be just ignoring the Tiger Team report, so a

lot of the information in my response had to do with the Tiger Team reports. I'll just read some, it says Safety and Health Assessment Team identified 13 compliance findings. One of these findings were reported by several others, is considered key. The contractor was evaluated as having a serious lack of experienced technical capability in the area of health physics and radiation technician support for routine operations, and particularly for potential radiation contamination incidents. The remaining findings dealt with deficiencies and inconsistencies in safety documentation and procedures.

I think we've ridden that horse to death today, but I think that it's very important that if one of our key issues is the lack of support in that area. I'm not going to try and read everything, but I hope that everyone in the Working Group has had a chance to look at the information that I

provided, and also what Shel did.

We think that -- to me, the Site Profile is still -- it's a snapshot in time today. The bays that were used at the time during our Site Profile were in 1226, 1264 was the first new building that came up, and it was barely in use at the time, at the ending point of `91 on our SEC petition. You have to look at the areas that were in use during the time frame of the petition. You have to look at those. You have to look at the 44 cells because they're quite different from the newer cells, because these were the locations where the work was done. And I'm fairly knowledgeable on the building safety features, because it was one of the responsibilities that I had in my job at the plant.

I'm also -- I was also a member of the RAMs Assessment Committee, and on the tag is -- that is on all radiation alarm monitoring devices, the CAMs at the plant,

still say Sarah Ray. I'm the one that designed it and hung it. I don't know all of the scientific information about how the monitors operate, but I know many of the problems that were related. I know when the CAMs were initially installed. I've done a lot of work in that area, and I basically took the same training as the electronic technicians, who are the ones that have to maintain those devices. I didn't calibrate them, but I have some knowledge, and some background.

At one point, I was also trained to build weapons. You know, when you're safety wiring, and you're twisting that little tiny wire around and around, you aren't 10 feet away. You are immediately on top of those devices. And all of these things are so important, and I think they all address the geometry, the location, the number of items, the fact that we're talking about a 28, a 31, a 33, a 41, a 43, a 48, a

51, a 53, all those old programs. Those are quite different than the ones we have today. So, you have to got to listen to workers, and you have got to look at past practices, not just look at today. I know it's easier, but I think -- and I'm not saying that people have not worked, but I think it's going to take a lot more work.

I've been dealing with parts and pieces of this since I lost my husband, Mike Dvorak, in 1998. And so, this has been a very long road for me. This is not about me, though. This is about the other workers there in Amarillo, and that's who I'm fighting for. And I will continue to do whatever I can. And I hope I'm helping the process and not hindering it, so that's really, I guess, all I have to say. I don't want to belabor anything, so thanks for listening.

CHAIRMAN CLAWSON: Thank you, Sarah. We appreciate everything you do do,

and we want you to realize that we are addressing these issues. As I've said earlier, we're still trying to get our tour down to Pantex. I have got word over the last few weeks that they are proceeding on with it. I'll let you know more about it. I know that one of my requests was that we wanted some of the former workers to be able to participate in that, and be able to explain it to us, and so forth. And I want you to know that we're continuing on with that, and we are trying to address each one of your issues that you have brought forth.

MS. RYAN: Thank you.

CHAIRMAN CLAWSON: We've basically gone through this, through the Site Profile stuff, and basically laid out the issue, but I'm going to bring up another issue that is still eating at me, and this is data capture. Now, I've sent stuff to Mark numerous times, and I get back that what we've got is on our SRDB or on the Site Profile Database. And I

don't think that I want to have to task SC&A to figure out what you guys actually have, because right now, I'll be right brutally honest, I don't know what in the heck we've really got. To be able to go through this SRDB, I have to open up every one of these to be able to figure out what we have got, and where we've got where. We're dealing with classification issues here to which I understand that at some point, Mark, we -- when we got into OTIB-0010, I believe it was, it was put forth to us by NIOSH, Site Profile point of contact was going to set up the site visits and the data retrieval and so forth like that so that we weren't having to go double and request the same information. And, at this point right now, Mark, I don't know what has really been pulled, so what I do want to get from NIOSH is, I need a list, or if you can't give me the item, tell me it's at Pantex, or whatever. And we've already talked with Pantex, because some of

the issues that SC&A is pulling out, some of those aren't classified, and we've talked to Pantex about keeping a file box down there that if this is where we have to be able to review these documents, this is where we'll get it out. But we want to give you the same opportunity that SC&A has of knowing where these items are at.

I've got to know where what we've pulled, I need to have some kind of data retrieval of what we've already pulled, what we've already looked at, and where it is at. You told us you're going to get us the interview notes. I spent six, seven hours the other day trying to find them. And, to tell you the truth, I really -- maybe I'm not looking right, or whatever, but when we do these Site Profiles, we need to make sure that both groups know what has been pulled, so that we're not tasking DOE, especially with Pantex, more than we already have to.

Right now, we're -- we don't have

a list of what's been pulled, and what's been done.

MEMBER GRIFFON: Can I ask a question on this?

CHAIRMAN CLAWSON: Sure.

MEMBER GRIFFON: I was talking to the IT person back when we were just getting these laptops, and they told me that the Site Research Database, basically, was in the middle of being converted over so that instead of just having numbers, you had titles. And he said it was just an internal review, and it was just a matter of time until it was going to go live, so to speak. Is that still --

DR. NETON: That's correct. It's in the works. I don't think it's live yet.

MEMBER GRIFFON: Okay. It's not, I mean, obviously, yet. That would make things a lot easier.

DR. NETON: I'd have to check and see exactly when they were projected to be

available externally.

MEMBER GRIFFON: You can still search, but to have the --

MR. KATZ: I asked about this just a week and a half ago, and he said this was just about -- it should be out, if it's not out now --

DR. NETON: There's no result. You can still query --

MR. KATZ: They've done the work, apparently, to do that.

DR. NETON: I think it will give you the title, the first 64 characters of the title are going to be in the title block.

MR. KATZ: Right.

CHAIRMAN CLAWSON: Well, I know that the Pantex, and it'll still have SRDB numbers.

MEMBER GRIFFON: Yes, there's numbers.

MR. ROLFES: Jim, do you know, do they not have access to our site query

interface?

DR. NETON: Right, but they're SRDB numbers. They really don't tell you anything.

MR. ROLFES: The only way -- I mean, I did a query this morning --

DR. NETON: You could go out there and query Pantex, and it'll pull up a bunch of documents, but they're a bunch of numbers.

MEMBER GRIFFON: I queried interview this morning, and I found about 10 documents with interviews on them.

MR. ROLFES: What I've done here, I've just got onto our intranet here and have pulled up the site research query interface, selected the Pantex site, and I'm going to type in interview as a keyword to search for. And I've got seven references that came up with interviews, and individual names. There's telephone interviews, face-to-face interviews.

MEMBER GRIFFON: SC&A's interviews

are on there.

MR. ROLFES: SC&A's interviews. So, for the conversation, you can type in other keywords like that to get an understanding of what types of information are available. So, all interviews might not be titled interviews, they might be conversation with, or report of discussion, so there's many different keywords that identify the same thing.

CHAIRMAN CLAWSON: That's understandable, but we still should be able to -- and the reason that we went into 10 and 11 was for the security issue of these papers, but also, too, so that we weren't double tasking the sites, so that we weren't requesting the same documents that had already been pulled by NIOSH. There's got to be some way that SC&A knows what documents have been pulled, and where they're at. And, especially with this site, because we may get in the situation that there are documents

that are pulled, but they are going to remain at Pantex. We need to be able to know where they're at. And my understanding when we got into this, and the Security Work Group that we brought up was that we were going to have a data capture plan, and it was going to lay out everything that has been pulled, what has been used, and where it's at. And if it's on the SRDB base, at least give us a number, or something like that. We've got -- I've got to know what's been --

MR. ROLFES: There is a spreadsheet of approximately 400 records that we requested, which is in the Site Research Database. I don't know what the number is off the top of my head. I don't know if I copied it and put it into the K: drive Advisory Board Review folder. I can check to see if it's there while we're discussing, but --

DR. NETON: Well, how many documents do you think we've captured from

Pantex? There's probably thousands.

MR. ROLFES: Yes, there's thousands of documents.

DR. NETON: See, that's the problem, Brad. I don't know, no matter how we package it, we give you titles or SRDB numbers, you still have to go through them. I mean, there's thousands, literally, of documents, so I don't know how we could give you assurance --

CHAIRMAN CLAWSON: Well, let me ask you it this way, then. So, should SC&A just go in and pull all their documents that they want and then have NIOSH come back in and try to figure out what they've pulled, or would you rather have SC&A lay out all the documents that they've pulled out, where they're at? I know that we're going through things right now, and all I'm trying to do is make sure that we both know what's been pulled, and where it's at.

DR. NETON: Right, and I agree

with that. I mean, I'm on board with you on this, but I'm just trying to figure out how to resolve this issue, because if there's already thousands in the database, there's nothing short of actually looking through those files to see if we have -- if SC&A has access to them. I don't know what else we can do.

MEMBER GRIFFON: I agree with you to a certain extent. I think the titles help a little.

DR. NETON: Well, we're going to get --

MEMBER GRIFFON: It says Health and Safety Reports, you know, you can kind of --

DR. NETON: And that's coming, so you'll be able to search by -- or least have an index by type.

MEMBER GRIFFON: Right.

CHAIRMAN CLAWSON: I'll give you an example. When we went to Pantex with a

list, and I was with Joe when this happened, and said these are what we need to pull, and they didn't pull them for us, because they had already been pulled by NIOSH months earlier.

DR. NETON: And they weren't in the SRDB by then?

CHAIRMAN CLAWSON: Well, we have queries for it, but we have no idea what had been taken out of it, or what had actually --

MEMBER GRIFFON: What keywords to query on.

CHAIRMAN CLAWSON: What keywords had gone, where it was at, so Joe then said well, we still need to have these pulled. And to be right honest, we have some document control people that were very upset that we can't get our stuff together. We just pulled these. They pulled everything else for us, except what had already been pulled by NIOSH.

Now, I know that you didn't

probably copy all those. You probably picked and chose out of those what you needed, and so forth. There's got to be a way that we can communicate. And the reason I express this is especially with this site, it is so difficult to be able to do these things. I just want to know how we can do it. And I watched at Hanford and stuff like that.

We've got a very good layout on that of exactly what's been pulled, where it's at, what it is under, and we need this especially with this one. Especially where we're going to be dealing with classified issues because we've already talked with Pantex about having to have a box for NIOSH or SC&A, to be able to cover -- because there's a lot of them that are only going to be able to be there, that were transferred to Germantown, or so forth.

MS. RAY: It looks like it might be appropriate to ask Pantex to set up a reading room area for you all in the

classified records section.

CHAIRMAN CLAWSON: Sarah, that's what we use when we go down there, but I'm just trying to figure out, I'm wanting to make sure that we know what has already been pulled from Pantex by NIOSH, so that we're not duplicating the requests, and so forth.

MS. RAY: I know that you have to sign to view those records, and I wonder if there's any way to get them, and it would be particular people, it would be Mark, it would be Kathy, it would be so-and-so and so-and-so. But could they go back and look at that or could they start from this point forward with your help and go back and maybe fill out some of those records and then start to do a library, if you will, your own little reading section. They're pretty good, and very helpful.

CHAIRMAN CLAWSON: Yes. The main ones that we're worried about at Pantex are the classified ones, but I want to make sure

that we know what each other has pulled, and that we're all dealing with the same information.

MS. RAY: Yes.

DR. NETON: I guess I'm at a loss. I mean, probably most of our documents came from Pantex, probably not all of them. So, there is a compendium on the SRDB of all the documents that have been pulled, because that's what we have.

CHAIRMAN CLAWSON: Okay.

DR. NETON: So that is the list. And I don't know what other list we could generate that would help the situation better.

MEMBER GRIFFON: Does that include classified, it might not include classified.

DR. NETON: Well, we don't have classified -- we don't maintain classified --

MEMBER GRIFFON: That's the only thing it wouldn't include. Right.

DR. NETON: Right. And maybe we'd pull classified records, and looked at them. We could -- I don't know how you would handle that.

MR. ROLFES: Let me answer a couple of questions here. You know, we might have gone to another site, like National Archives and found some Pantex documents and pulled those and scanned them into our Site Research Database. We might have also gotten records from Pantex and collected those, as well, you know, from different sources. We're not just going to Pantex. As you aware, we went out to the Albuquerque Service Center, NNSA Service Center, to review records out there. We requested some records there and because SC&A was going out this week to review those, we didn't have those sent off-site. So, the records that we reviewed at Pantex historically, specifically, classified records, those records are still down at Pantex. And if

they said that they pulled them -- they wouldn't pull them for you, I wouldn't understand why that was done, because we pulled those documents, reviewed them, and left them there. So, we -- also, any unclassified records, we've put into the Site Research Database. There were a couple of UCNI records that we had received, some unclassified control nuclear information, our contractor, ORAU, can keep those separately as hard copy documents. I believe SC&A has already received copies of those, as well. So, as far as the number of Pantex records that we have in our Site Research Database, there are 1,141 records right now, and these don't include individual's personnel dosimetry files or telephone interviews or anything else that's conducted separately under the dose reconstruction aspect of this. So, we've generated lists of documents.

Now, when you do a data capture, if you take a look at the types of

information that are reported, we'll typically get like an accession number for a box, and it'll have a descriptor, and sometimes it's as vague as correspondence, other times it'll say radiation exposure information, sometimes it'll say accidents and incidents, so sometimes there's large volumes. You know, without actually going through the records, it's probably important for you guys to go through the records, as well, because a lot of the records could have been incident records, but had absolutely nothing to do with radioactive material. So, when we do a data capture, we typically try to take notes to describe what types of information are in the boxes, and whether or not we choose to capture that in case somebody raises a question in the future about, well, why didn't you get that information. And then we have some notes that say well, we didn't get this information because it was related to chemical exposures

or not something that would help us in dose reconstruction.

MR. HINNEFELD: Now, I want to make sure I'm clear on one thing. When we do the dose -- when we're doing the -- we haven't done any data capturing down there for a while.

MR. ROLFES: Down at Pantex, the last one that NIOSH participated in was in May of 2008.

MR. HINNEFELD: Okay. But, at this point, there should all be on having the practice of, if we're going on to data capture, we notify the SC&A counterpart and notify the Board. This is the data capture, or even if we're making a keyword query, we assemble a keyword query, say here are the keywords we want to query to send to such and such a site. Add on what you want, and we'll send one keyword query -- we should be coordinating those efforts at this point. So, if that's not going on, then it should

be. And if it's not going on on my side, we'll deal with it.

Now, with respect to what we have, Brad, I don't know we can improve the listing of it. I mean, there's this application that will show you all 1,141 references, and will give you the first so many characters of the title that's running now. I just pulled it up.

DR. NETON: Internal, I don't know if it's available externally.

MR. ROLFES: It's not running for us.

MEMBER GRIFFON: No, it doesn't. I just tried --

DR. BUCHANAN: I get that on mine.

MR. HINNEFELD: You come into Our Staff Tools, and you don't see that?

MR. ROLFES: Maybe they don't know how to come in.

MEMBER GRIFFON: I do it through the Staff Tools.

MR. HINNEFELD: So, it shows -- I mean, I don't know how we can -- what we can do to go beyond this. And it also has keyword search up there to bring these up, but I don't know how we can go beyond that at this point, for what is --

MEMBER GRIFFON: You know what would be helpful, is when you -- when things are put into the document review section, I notice that the file name is still this number.

MR. HINNEFELD: Okay.

DR. NETON: That'll change based on using the new application.

MR. ROLFES: Like, for example, the evaluation --

MR. HINNEFELD: Because everything in there right now is --

DR. NETON: The only thing we had access to was --

MR. ROLFES: All the references from the Evaluation Report just have the

reference ID number, and don't have the title.

CHAIRMAN CLAWSON: You know, maybe this --

MEMBER GRIFFON: I think that's what people go to a lot, too, because we set up that for the Board to go to.

MR. ROLFES: I mean, keep in mind that that compilation was maybe 50 documents, and we've got 1,100.

MEMBER GRIFFON: Yes, I know. That's why we wanted it, because we wanted to narrow it down, so we didn't have --

MR. ROLFES: You can also search, if you like have -- you know, you've got those 50 numbers. You can plug those in as keywords, and get the title, and such.

DR. BUCHANAN: Do you have to do -- can you do any -- you said you have 50 numbers.

MR. ROLFES: You can use some basic Boolean operators in there, but --

DR. BUCHANAN: Do you separate them by commas and it will bring them up all?

MR. ROLFES: If you type in, you know, say five words, you can leave the parentheses, excuse me, the quotation marks off those five words, and any document that has those five words in it will come up.

MR. HINNEFELD: Any document that has any one of those five words will come up.

MR. ROLFES: Right. Right.

MR. HINNEFELD: Like I typed in personal communication, I got a whole bunch of stuff, some of them were personal communication, some of them were file types that had personal, some of them were --

DR. BUCHANAN: Can you do capital A and B, and make it --

MR. HINNEFELD: Well, let me find out.

DR. BUCHANAN: And if you've got say five document numbers, can you put those

in and get them all five to come up?

MR. ROLFES: Yes, all five will come up, but --

DR. BUCHANAN: And how do you --

MR. ROLFES: -- when you start putting quotations in -- if you start putting quotations in, then -- I just use a space.

DR. BUCHANAN: You just put five numbers in with one space between them.

MR. ROLFES: Yes.

DR. BUCHANAN: And it'll bring up all five documents.

MR. ROLFES: Yes, let me verify that.

DR. BUCHANAN: Go ahead.

MR. HINNEFELD: We can do this offline.

MS. RAY: Also, you can use the wildcard character.

CHAIRMAN CLAWSON: Is that an Ace of Spades, or Jack of Diamonds?

MS. RAY: An asterisk.

CHAIRMAN CLAWSON: Okay.

MR. ROLFES: That does not work for us.

MS. RAY: It does not work for you all?

MR. ROLFES: No, it does not.

MS. RAY: That's kind of an important thing to leave out of a database. I've taught a lot of that, myself. Good old Boolean operators.

CHAIRMAN CLAWSON: Maybe part of the issue is that these documents were pulled before these procedures and so forth.

MS. RAY: It seemed like that one thing that might work in the future is if either agency requests anything, that the document automatically goes to the other.

MR. HINNEFELD: That should be in place.

CHAIRMAN CLAWSON: And maybe that's -- maybe what I'm seeing is from the past trying to go forward here. And we'll

just proceed on further, but I know that there's been a lot of question of finding it around in this SRD database of what actually is out there, and so forth. So, we'll address that as it comes down the road. But for Ted, one of the things that I want to make sure is so that I don't mess up on the tasking of this, we're basically going into an SEC Site Profile Review for SC&A. And I want to make sure that we've tasked -- that I've done it right. Actually, you wrote me something here, and he says SC&A tasked to conduct its usual SEC-related sample review of data adequacy, and context of issues identified in today's item. And I just want to make sure that -

MR. KATZ: Yes, I could see completeness --

CHAIRMAN CLAWSON: Everything that we normally do under that. And the reason why this is kind of so convoluted is, like I've said earlier, this started out as a Site

Profile issue. It's rolled into an SEC, and now we're proceeding into the full SEC issue. And I just want to make that SC&A is --

MR. KATZ: Well, that's all straight. I think what you'll get back from SC&A won't be -- it won't be exactly the same as if SC&A had, in a normal situation, where they hadn't done the Site Profile, and hadn't raised all these issues already out of their Site Profile Review.

CHAIRMAN CLAWSON: Right.

MR. KATZ: You're not going to get a de novo whole package, you're going to get -- it's more like the process is already ongoing, so you're going to get sort of a report that hits the areas that Joe just summarized and you just summarized. But it won't be the normal full-blown SEC evaluation.

MEMBER GRIFFON: Not going to redo what they've already done.

MR. KATZ: Right, because they've

already raised all these issues.

CHAIRMAN CLAWSON: Right. And this has been kind of an interesting one to try to get your hands around, and I've been trying to do that all day long here. So, that, basically, completes everything that we've got on the agenda here today. If there is anything else that needs to come before this Work Group?

MS. RAY: Wasn't there something about scheduling future meetings?

CHAIRMAN CLAWSON: Yes, there is, Sarah, but one of the things that I've got to be able to do is, I'm going to have to find out from SC&A what kind of time frame we're looking for their review. They officially cannot go into these until they've been tasked and so forth like that, so what I'm going to get back from both sides is a list of issues that we brought forth today. And they're going to give me a rough time frame. And once we get these issues back, then

we're going to set up another Work Group meeting, which you'll be courtesy copied on.

MS. RAY: Okay. Thank you. I just remembered seeing one last item on the agenda.

MR. KATZ: You're absolutely right, Sarah. So, we'll get from DCAS and from SC&A sort of an action item list following up on this meeting.

CHAIRMAN CLAWSON: Right.

MR. KATZ: So just so that everybody is perfectly clear.

CHAIRMAN CLAWSON: So, we're clear on both, and when we send it to both sides to clarify what we were actually looking for.

MR. KATZ: Yes.

CHAIRMAN CLAWSON: Because we've come at this before, that no, that really wasn't what I was looking for. And that's kind of why we've done this this way.

MR. KATZ: Right.

CHAIRMAN CLAWSON: So, we're clear on what's going on there. And Joe is already aware of the issues of proceeding on, after they get the tasking.

MR. KATZ: So, with that --

CHAIRMAN CLAWSON: With that, we'll end this Work Group meeting.

MR. KATZ: We're adjourned. Thank you, Sarah, for hanging with us.

MS. RAY: Thank you very much.

(Whereupon, the above-entitled matter went off the record at 4:05 p.m.)

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