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

convenes the

WORKING GROUP MEETING

ADVISORY BOARD ON

RADIATION AND WORKER HEALTH

ABRWH WORKING GROUP MEETING
ROCKY FLATS

The verbatim transcript of the Working Group Meeting of the Advisory Board on Radiation and Worker Health held at the Marriott Cincinnati Airport, Hebron, Kentucky, on May 30, 2006.

C O N T E N T S

May 30, 2006

TRANSCRIPT LEGEND

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P R O C E E D I N G S

(10:15 a.m.)

WELCOME AND OPENING COMMENTS

DR. WADE: Again, welcome all. This is Lew Wade. This is a meeting of the working group of the Advisory Board. This is the working group that looks at a variety of issues including individual dose reconstruction procedures review and site profile review. Because this group has worked so diligently on the Rocky Flats site profile the full Board asked them to take on the task of pursuing the remaining issues that relate to Rocky Flats as it relates to the SEC petition and there have been a number of meetings trying to work those issues down to the bare minimum so that this working group can bring back findings and possibly a recommendation to the Advisory Board. That's what we're here to do today. Around the table we're going to introduce ourselves but before we do general introductions I would ask if any members of the Board are on the telephone, if you would identify yourselves.

MR. GIBSON: Mike Gibson is here on the Board.

No conflicts with Rocky.

DR. WADE: Okay. No other Board members? We have three Board members. We have Mark, Mike and Wanda. We don't have a quorum so we can certainly do our working group business. Let's start by going around the table here and simply identifying ourselves. And then we can come back and do our conflict of interest discussion briefly once we've completed the general introductions. Again this is Lew Wade. I work for NIOSH and support the Advisory Committee.

MR. FITZGERALD: And this is Joe Fitzgerald. I'm with the SC&A audit team.

MR. GRIFFON: Mark Griffon with the Advisory Board.

DR. BISTLINE: Bob Bistline with SC&A Advisory. Used to be at Rocky Flats for 39 years.

DR. MAKHIJANI: Arjun Makhijani, SC&A.

DR. MAURO: John Mauro, SC&A.

DR. NETON: Jim Neton, NIOSH.

MS. MUNN: Wanda Munn, Advisory Board.

MS. HOWELL: Emily Howell, HHS.

MS. JESSEN: Karin Jessen, ORAU team.

DR. ULSH: Brant Ulsh with NIOSH.

DR. WADE: Now, let's start and identify other

members of the SC&A team that might be on the telephone.

DR. LIPSZTEIN: Joyce Lipsztein.

DR. WADE: Welcome, Joyce.

DR. LIPSZTEIN: SC&A.

DR. BEHLING: Hans Behling, SC&A.

DR. WADE: Good morning, Hans.

DR. BEHLING: Good morning.

MR. BUCHANAN: Ron Buchanan, SC&A.

DR. WADE: Good morning, Ron.

MR. BUCHANAN: Good morning.

DR. WADE: Anybody else from SC&A?

(No response)

DR. WADE: How about NIOSH OM?

MR. RUTHERFORD: LaVon Rutherford, NIOSH.

DR. WADE: Good morning.

MR. FALK: This is Roger Falk and I'm with ORAU.

DR. WADE: Okay.

MR. LANGSTED: This is Jim Langsted. I'm with ORAU.

MR. ROBINSON: Al Robinson. I'm with ORAU.

DR. WADE: Anybody else?

UNIDENTIFIED: (Inaudible)

DR. WADE: All right. Any other federal

employees on the line?
(No response)
DR. WADE: Anyone who --
MS. WARDER: Amy -- Amy Warder with the office of Congressman Beauprez.
DR. WADE: Good morning.
MS. WARDER: Good morning.
DR. WADE: Anyone else on the line who would like to identify themselves? It's not required.
(No response)
DR. WADE: Okay. Then let's spend a moment just having the leaders of the -- the appropriate organizations identify if any of their members are conflicted. John Mauro for SC&A?
DR. MAURO: No one in SC&A is conflicted on Rocky Flats.
DR. WADE: Just --
DR. MAURO: That includes myself, John Mauro, Joe Fitzgerald, Arjun Makhijani, Bob -- oh, excuse -- forgive me, please, Bob. This man has recently joined SC&A as part of our team. Thank you very much, Bob. Bob, of course, is conflicted for his many years working for

Rocky.

DR. WADE: I understand.

DR. MAURO: My apologies.

DR. WADE: Not a problem. And we're pleased to have Bob here. I was chatting with Bob earlier. I mean what this Board and this working group is about is getting it right and we welcome people who have knowledge. We certainly think it's important that conflicts be identified but that those voices not be silenced. So Bob, welcome. We're pleased to have you here. Brant, your team?

DR. ULSH: Gene Potter, are you on the line?

(No response)

DR. ULSH: Okay, he's --

MR. POTTER: Yes, yes. I'm -- Gene Potter's on the line.

DR. ULSH: Okay. We've got -- from the ORAU team we've got Gene Potter, Roger Falk and Jim Langsted, all of whom have conflicts at Rocky Flats. They -- Similar to Bob they worked there for a number of years. No one from the NIOSH team has any conflicts.

DR. WADE: And I assume the Board members have no conflicts on Rocky Flats?

MS. MUNN: None here.

DR. WADE: Okay. Mark?

MR. GRIFFON: No.

DR. WADE: It's all yours.

SUPER S ISSUE

MR. GRIFFON: All right. Okay. I think we -- we sent around a matrix, the latest matrix from the Rocky Flats site profile review, and it's dated April 22nd, 2006 for those people on the phone call. Really, and it tracks pretty well with the -- I've come up with like five major topics that I think we're going to cover and the matrix sort of goes along in this order. The first one being Super S plutonium question; the second one neutron dose reconstruction and several other matrix items related to that so I thought I'd lump them into one -- one item on the agenda. A third item is other radionuclides and that includes the americium question. A fourth item is data reliability which includes both questions on database as well as these more specific I guess case follow-up questions that we've been pursuing. And then the fifth -- the last one is kind of a new item that came up at the last Advisory

Board meeting which was the question on D&D workers, how dose reconstruction would be done for D&D workers. So I think we're going to start with discussion on Super S plutonium and I think that where we left it was that SC&A was going to follow up on the TIB freon model, looking at the design cases and the USTR cases a little more in depth. I think they had done a general review of that but I think they were going to do more follow-up on that. And I guess I can turn it over to SC&A unless -- unless Brant or Jim have comments. I think it's really in SC&A's court on this one.

DR. MAURO: Yeah, I guess over the last few weeks Bob and Joyce have been looking very closely into the lab exchange and lab analysis. I guess I -- I would like to turn that over to -- to start it off. Joyce really has taken the lead and Bob came in and hooked up with the team and -- to pick up from where we left off. So with that, Joyce, if you could provide a -- an overview of the follow-up investigations, maybe even starting a little earlier. Sort of set the table where we left off at the last meeting, get everybody oriented, sort of on the

same page and then pick it up from there and how the -- your investigations progressed and how Bob and you -- where Bob and you are at this point in time in that process.

DR. LIPSZTEIN: Okay. One of the things that I started doing was to look at the data from Rocky Flats that are part of the uranium -- U.S. Transuranic and Uranium Registry. So I looked at several of the cases and on those cases there are some bioassay data and the autopsy data. So I looked at several of them to see if the -- the model that NIOSH presented for us, Super Type S, which is an -- an empirical model, would be claimant favor on those cases. Other -- Saying it in another way, to see if the predicted or the -- or the quantities would be higher than the ones or -- or similar to the ones on the autopsy data. So far all the cases that I have analyzed -- I didn't analyze all of them. So far if you im-- if you use the high fired approach I always get predicted quantities that are higher than the quantities from the autopsy data. I am finding some problems with the bioassay data that is presented on the Transuranic Registry and I

will need to look at -- at this then. Like for example I -- I got into a bioassay table where I had a urinary excretion with a date after the person died so I have -- I have to look to see how -- how well in another place the bioassay data that is on the -- the registry. But I think that most if -- the predictions from the high fired model are so much higher than what we find on autopsy that I think this model will envelope everything of problems. Now, we, I think then Mark develop of this also. We want to input the -- the data for the cases itself. If -- If you apply of course the -- the empirical model it -- it's exactly what you get from the -- the curves that were shown. And then I think Mark can -- probably more about that because I didn't get into exactly all of the -- the -- the database but some of the data from the people that were used to -- to devise the models, not all the bioassay agree that were used so one is wondering why this happened. And I think that's where we stand for now.

MR. GRIFFON: What Joyce -- I -- I went with the cases, mainly the -- well, the fired cases

and also there's -- there's I think two or three other cases that are design cases. And I -- I tried to look -- well, let me just -- this -- I mean part of what led me to this was when I looked at the spreadsheets provided it was clear in all the fired cases that the in vivo counting started right away and they did counts daily right after the incident. On the urine side often that wasn't the case at least for the data provided in the spreadsheets and I thought that was rather peculiar so I tracked back. Without having identified data I had to kind of do it detective style and identify high points and find the right exposure ID and sort it by that. But I -- I identified for several of the cases where they were they were missing a large chunk of data at the beginning, a large chunk of urinalysis data. Case 825 in particular since that is the bounding case, that was missing a big chunk of data from the date -- date up to the accident, 10/19/65 'til 2/10/66 I think if my -- if my notes are right here. But there was a large chunk of data missing. So I just wondered was that -- on that -- I think on that case in the spreadsheet

there is actually a note saying that all the data wasn't retrieved and I just wondered why -- why this was and at first I thought, well, 825, 872 and 934 -- or 825 and 872, those two cases in particular were chelation cases so I thought maybe that's why the early data was excluded because it had a spike in the data and -- and you want it to fit the long-term component or whatever. But -- But then I -- I just -- I just wanted maybe an explanation from NIOSH ORAU team on why that, you know, was that intentional or was that just that you didn't have the right data together. Also I -- I -- and I -- I -- I did this -- I tried to look at the intakes calculated from the urinalysis and the lung data. And in TIB 49 they say you modify the parameters, you did this empirical fit to basically make the best fit but also to -- so that the calculated intakes would be basically the same from the urinalysis or the in vivo. And if I use all the data on these cases I get a slightly dif-- slightly -- a more -- a more different intake calculated which I guess is no surprise really but -- and it actually ends up with a lower intake for

whatever that -- that means. But I -- the main question I have was why was that data excluded and was that -- that pattern sort of consistent with all the cases. Did the chelation case -- was the chelation effective basically? Because I was hearing sort of maybe mixed stories on that whether the chelation did anything at all. And so maybe I'll just ask that.

DR. NETON: Yeah, I think Roger Falk is on the phone --

MR. GRIFFON: Yeah.

DR. NETON: -- and he should be -- he's in the best position to answer.

MR. GRIFFON: Right. Right.

MR. FALK: Yes, this is Roger Falk. The -- The -- The practice is that if a case was actually chelated that a person should not use the urine data which is less than 90 days past the date of the last chelation because that is actually perturbed urine data and therefore should not be used for the modeling purposes. And that's why -- that's why we -- that's why we excluded the urine data that could have been potentially affected by the actual chelation process. Also for a couple of the cases I did

not have all of the person's urine data available, and that was especially true for the case 872. Since the Super Type S is mainly the lung retention I was focused on getting the -- I was focused on getting the complete setup of the lung data. But the only data that I was really concerned about was the modern long-term urine data that I did have on the data floor. So it was more of a practicality as to whether it was useful especially during the early development of the models to try to get all of the early urine data, and the choice that I made was no, that was not necessary because it is a lung retention issue that we focused on.

MR. GRIFFON: Okay. I mean I -- I do -- what you said, that 90-day thing doesn't quite fit with the three cases but case 825 actually the 90-day idea -- notion that you -- you indicated seems to be what -- what went on. Case 934 is a chelation case though and the -- well, that -- that may be consistent, too. And then like you said, 872, it -- it was just a question of not being able to recover the early data because 872 was the most -- the one that I looked at first and the data in the spreadsheet

you used didn’t start ‘til 7/10/1980. And there were -- there -- there were probably about 50 data points prior to that from 10/17/65 so that’s what kind of prompted my looking into this. But I don’t disagree with what you said about the long-term component being the critical one. I -- I guess the other thing this brought me back to was -- was the -- just how did -- did we -- how did you arrive at the case selection. And I did actually in looking at this it did allow me to confirm that all these six fired cases that I looked at seemed to have no previous -- they seemed to be clean cases prior to the fire, at least where I could find data. Some had no data before the fire but the ones that I looked at did seem to be “clean cases”. They had zeros or less than MDA prior to the fire so that would support your -- your assertion about that which is good. That makes sense. But I didn’t know otherwise how these six were determined out of the 25 or so that you said had high lung burdens. And I don't know if you can shed any more light on those. Were these the -- these weren’t necessarily the highest

exposed; they were just the best clean cases that you had?

MR. FALK: They were the best clean cases and they also participated in the medical monitoring program --

MR. GRIFFON: Oh, later?

MR. FALK: -- later on so that we had the modern lung counts and we had the modern urine data. And -- And the modern lung counts was the most crucial because then we got -- then we got the long-term retention profile and that was essential.

DR. LIPSZTEIN: I -- I have another question for you. When I look at the autopsy cases there are some people that did not participate in the -- were not contaminated in the plutonium fire. In fact they dealt with (unintelligible). And when I use the high fired plutonium model I always get the amount in organs that are higher than the ones from autopsy but if instead of using high fired plutonium model I use simply Type S plutonium sometimes I get lower amounts in -- depending on the scenario of course, if I interpret the bioassay data I -- sometimes I get lower

quantities in lung than they are from the autopsy data. So are we going to treat all plutonium cases as high fired or how -- or what's the proposal of NIOSH?

DR. NETON: Yes, we will if we don't know any better we're going to treat them all as Super S type material. It's the issue we're dealing with, not only Rocky now but other sites. But it's -- it's -- it does seem to be that it doesn't necessarily have to be high fired from a fire. I mean we're seeing that and we noticed that as well in the autopsy cases.

DR. ULSH: Or it could be not this particular fire but another fire event.

DR. NETON: Or whatever but, you know, if -- we're going to default for these cases when it's claimant favorable to the high fired Super S material.

DR. MAURO: One of the -- this is John Mauro. One of the subjects we talked about at an earlier meeting was that it wasn't only necessarily the fires that produced it so -- so there actually were operations going on where the potential to produce high fired plutonium was also. So I think it's --

DR. ULSH: Yeah.
DR. MAURO: -- true.
DR. NETON: It's just not high fired any more. I think it's just the Super Soluble form of plutonium that, you know, one sees it at -- at Mayak and other places. It's -- It's a reality.
DR. MAURO: Now, would they also -- I'm sorry. Would they also in those circumstances, I know the fire -- we're dealing with these very small particle size distributions that were a fraction of a micron. Is that also the case for operations or is there really a clean divide between the particle size, EMAD, for the high fired, versus let's say, operations? Was there a clean distinction there or is -- are we in a situation where the high fired -- we're actually moving in a direction where the high fired plutonium was known to be the default?
DR. NETON: The high fired chemical form but not necessarily the particle size distribution. Right now I think our particle size distribution if a person is involved in the fire is .3 microns. I'm not sure. I think it's .3 microns. But we were not intending to

default to smaller particle size unless we knew the person was involved in -- in the fire. Right now our default for the normal operations of the plant is for -- as is for other sites unless -- I haven't seen anything to the contrary on that.

MR. GRIFFON: Do you know if you have enough information to determine whether a person was or was not exposed to Super S or is that going to be based on the --

DR. NETON: Super S is going to be on --

MR. GRIFFON: -- urinalysis data itself or --

DR. NETON: Well, the Super S is just another one of the -- looking at other sites we have three default solubility classes.

MR. GRIFFON: Right.

DR. NETON: But Rocky Flats we have four default. And whichever one gives you the largest -- the larger dose to the organ --

MR. GRIFFON: So you're applying it across the board you're saying?

DR. NETON: Yeah.

MR. GRIFFON: Okay. That wasn't clear.

DR. NETON: We're not going to triage them based on whether they're --

MR. GRIFFON: I thought you said unless you knew otherwise.

DR. NETON: I'm talking about the particle size. That's a different issue.

MR. GRIFFON: Okay.

DR. NETON: The fire we know is a false particle size.

MR. GRIFFON: Particle size. Oh, for solubility.

DR. NETON: Solubility we're going to apply.

MR. GRIFFON: Got you.

DR. BISTLINE: So you're using .5 micron for the particle size default?

DR. NETON: I believe that's the case at Rocky right now, yes.

DR. ULSH: I think so. That's the ICRP default.

DR. NETON: Well, you can -- unless we know otherwise. Now, that's, you know, depending upon the situation. If we get data that -- that indicate that there are smaller particle size distributions for other operations we'd certainly use them but right now when I –- I haven't looked at the profile awhile but --

DR. ULSH: But am I correct that that's not as

critical an issue when you're starting with urine samples?

DR. NETON: Right. When you start with urine data which we believe we have most people from, then particle size is not an issue.

DR. BISTLINE: Well, I think it's -- I think it's claimant favorable, any approach that you're taking in terms of -- in treating the high fired data because there are areas in production processes where you have a mixture and there's certainly an indication that there's a mixture. You have some -- some high fired as well as -- and case number 1228 is a good example of that over-pressure condition that was -- that was brought out in 049. And I think that's true of -- of a lot of cases that -- if you look at it carefully you'll see that it fits that profile.

DR. MAURO: Yeah, this is John.

DR. LIPSZTEIN: I couldn't hear anything.

DR. MAURO: Go on, Joyce.

DR. LIPSZTEIN: I couldn't hear anything that was said now.

MR. GRIFFON: Oops.

MS. MUNN: Oh, dear.

DR. NETON: Are these microphones live on our end of the table? I assumed they were.
DR. LIPSZTEIN: I can hear you perfectly, Jim, but I couldn't hear --
MR. GRIFFON: Okay. We'll have to make sure we lean toward the table and speak up. Can you hear me, Joyce?
(No response)
DR. MAURO: Try it again.
MR. GRIFFON: Joyce, can you hear me?
DR. LIPSZTEIN: Yes.
MR. GRIFFON: Okay. We'll just have to be careful to speak up a little louder and toward the mike. Sorry about that. Bob, do you want to maybe repeat what you said if you can remember it, repeat what you said and --
DR. BISTLINE: Well, one of the -- one of the points that I was making was that I feel -- feel pretty comfortable that the -- the approach that NIOSH is using with regard to the use of high fired oxide is making those calculations both directions using S as well as Super S, are -- are -- are a good approach for conservatism for -- for the workers because some of the operations -- the foundry

operations, calcining operations and so forth that workers were involved in -- involved both there was an appearance that there may have been some high fired mixed in with the -- with the little, slightly more soluble form and the case 1 -- 1228, if you look at it, it was a case that there was no fire involved but there was an over-pressure and certainly fall -- it fits that pattern. And I know other sites have seen some similar types of profiles in -- in their -- in their workers.

DR. ULSH: I think that's a good argument for why we're just going to default the Super S because like you said, I mean there are other situations that could lead to exposure to Super S and sorting that out would just be a -- a nightmare so...

MR. GRIFFON: That wasn't clear to me earlier but maybe -- maybe it was to you guys. That -- That -- That's good to hear. Are there any other questions on Super S? I think what remains -- I think that Joyce and Bob are going to finish up and provide us with a written piece on the analysis, right? Your comparison with the USTR cases and --

DR. MAURO: Yes.

MR. GRIFFON: Is that correct?

DR. MAURO: Well, before we talk about the closeout, there was one issue that emerged.

MR. GRIFFON: Uh-huh.

DR. MAURO: I think it was a week ago yesterday we had a call. I missed yesterday's call. But Bob, you -- you pointed something out about the actual empirical measurements that were made on the autopsy data and it was your -- and you were personally involved in some of that. And it was your experience that there was a fairly large uncertainty in the measured values that was -- and as a result I think everybody has been operating on the -- on the premise that while we've got some very nice numbers from the autopsy data and then we use those as our benchmark. Okay, here's a number. How do we predict against that number? But Bob pointed out that there was a pretty wide uncertainty on some of these measured values and during the conversation, Bob, you -- you have indicated that it was your sense at the time that there was enough conservatism built into the protocol that accounted for let's say the -- the

significant amount of uncertainty. You -- You indicated you were going to look into that a little bit.

DR. BISTLINE: Yeah. Yes, John. Just -- Just to point out, one of the cases that was not included in this but -- and -- and I think rightfully so for the most part is -- is the highest case that -- that occurred at Rocky Flats in the 1965 fire. And in this particular case the -- the individual had a -- a very high deposition, lung deposition at the time, died in 1973, and -- and in the autop-- just prior -- the last lung count that was done on him showed -- showed 107 nanocuries in his lungs. But when we did the autopsy and analyzed the tissue in the lungs this individual had 222 nanocuries of plutonium and 48 -- 47 nanocuries of americium in his lungs at the time of his death so -- so, you know, there's quite a bit of disparity here in the -- in the count. And yet looking at this I would say that the approach that NIOSH is using with this empirical format is -- has a large enough uncertainty associated to it to -- to make it conservative. And I -- I feel fairly

comfortable with it so in -- in some cases we may be over -- may be over-predicting the amount considerably but in other cases there is enough disparity in -- in the analysis that -- from what the lung count indicated and what the autopsy data indicated that -- that we -- we can't close that gap too much or we may -- we may -- may not be as conservative as we thought we were.

MR. GRIFFON: All right. So I think SC&A is still going to provide a written piece on this, right?

DR. MAURO: Let's -- Let's talk about that a little bit.

MR. GRIFFON: Yeah.

DR. MAURO: We are -- our -- our overarching plan is not to deliver the official report, which is the review of the evaluation report, until after the June Board meeting. That would be our official work product because I think there's a lot of word-smithing, a lot of work to be done, lots of issues to be covered. But we did talk about I guess trying to bring to the table closure on at least some issues in some form. I'd like to talk a little bit

about, you know -- really to talk to Bob and then Joyce, you know, Joe. Right now are we -- are we -- are we in a position now where we can start to put together white papers? I'm not even sure what you would call it. Prior to the meeting, and perhaps have the working group, deliver something to the working group along the lines of the conversations we're having right now where you'd be in a position to report back to the Board for the Washington meeting. I'm not quite sure how do we bring this -- this home without the actual having the -- the official work product delivered.

MR. GRIFFON: Right.

DR. MAURO: I mean I guess I -- you know, what would you -- what would you like?

MR. GRIFFON: I'm not sure either. I -- I mean I was thinking more of a, you know, we've had responses going back and forth in our work group process and if this could still be just considered another response to matrix item number one in a Word document. But I -- I guess it's leading us to your final product which is your review report or your evaluation report. Hopefully where, you know -- so that

we don’t have surprises in that evaluation report.

DR. MAURO: So this would be a work in progress though. Is that what you’re suggesting?

MR. GRIFFON: Yeah, a draft.

MR. FITZGERALD: In terms of evaluation. I mean --

MR. GRIFFON: Yeah. In terms --

MR. FITZGERALD: It’s really our evaluation at this point in time.

MR. GRIFFON: Right.

MR. FITZGERALD: And that would proceed to be included in this overall ER, evaluation that we put together after the meeting so I think it would be --

MR. GRIFFON: Just so you’re not saving everything until the final report.

MR. FITZGERALD: Right.

MR. GRIFFON: So NIOSH has some sense and the work group has some sense of the direction.

MR. FITZGERALD: Yeah.

MR. GRIFFON: And where we’re at on each issue. So an interim report would be great for -- for -- and I think you’re probably going to be in a position to do that on several of these major

topics that we discussed.

DR. WADE: On the Board's agenda we have --

MR. GRIFFON: At least a few of them.

DR. WADE: On the Board's agenda we have a block of time allocated for Rocky Flats SEC update so there's time. I think the more you can bring to -- to further the discussion with the process I think the better.

DR. MAKHIJANI: Mark, the -- the -- the matrix item, the really technical items, maybe the format -- this is the first time we would be kind of doing a piece for an evaluation report review that comes from a matrix item.

MR. GRIFFON: Right.

DR. MAKHIJANI: And maybe -- maybe a format -- thinking about it as a -- as a technical memorandum on a matrix, corresponding to a matrix item. Because that's what it is really. It's a -- It's not a white paper that's definitive on a subject that covers everything because NIOSH has done so much work on it. So I would hesitate for it to be thought of as a white paper.

DR. MAURO: Yeah, I -- I --

DR. MAKHIJANI: But maybe a technical

memorandum of SC&A's review.

MR. FITZGERALD: That was kind of my fault. Not a white paper but really an update in term -- a report in the form of a memorandum would be fine. That would keep it in the context that we've done in the work group before.

MS. MUNN: Certainly you need --

MR. GRIFFON: Same -- Same thing there, yeah.

MS. MUNN: Yeah. Any technical report that indicates agreement -- closure on a specific major guideline would certainly be greatly appreciated here.

DR. ULSH: All right. Well, that was my question. Is -- Is -- Is that what you're talking about, John? Limit it to those issues where you feel that we can close or is this --

DR. MAURO: Well, yeah. I'd like to hear a little bit more from Bob and from Joyce on -- you folks feel you're done I mean other than let's say assembling material?

MR. FITZGERALD: She's done three or four cases so there's certainly more on her plate.

DR. MAURO: Okay.

MR. FITZGERALD: But I think we're progressing pretty well. I think, Joyce, you were saying

maybe the end of next week we would be pretty close.

DR. LIPSZTEIN: Yes, but I still have a lot to do.

MR. FITZGERALD: Yeah.

DR. LIPSZTEIN: So I don't know. One of the things that is bothering me is the bioassay data from the uranium (unintelligible) data that is on the -- I think it’s from the ORAU O-drive, there is a part on the Rocky Flats uranium transuranium registry. Is this bioassay data, can we trust it? Has ORAU looked at it? Because it’s bothering me a lot that if I -- I -- I went into one of the cases and there was a urine of bioassay value that was taken on a date after the person was dead so I -- I don’t know how to -- if -- if I should trust it.

MR. GRIFFON: I don't know to what extent you’ve val-- you went in and validated the USTUR.

DR. NETON: Are you talking about the USTUR data?

MR. GRIFFON: Yeah.

DR. NETON: Yeah. That -- That is provided as

it was given to us from the USTUR.

MR. GRIFFON: All right.

DR. NETON: So we did not go through and --

MR. GRIFFON: Right.

DR. NETON: -- go through and do a reliability check or whatever on it.

MR. GRIFFON: You're using that sort of as a confirmation of your --

DR. NETON: Right.

MR. GRIFFON: -- a check on your model, right? Yeah. So the answer is no, Joyce, I don't think they've --

DR. NETON: We haven't explored those -- those data points at all.

MR. GRIFFON: And I don't know what process USTUR has for quality control for their case data.

DR. NETON: I don't know. I mean we can find out and certainly -- Tony James provided those to us.

MR. GRIFFON: Right.

DR. NETON: For this program.

DR. MAKHIJANI: In light of Joyce's question it might be useful to have a couple of -- a document from Tony James saying what they did

to validate the data so, you know, so we have some confidence in that procedure. Or listing some documents.

DR. NETON: I'm not sure they've done anything to be honest with you. I mean these cases were put out there for people to look at.

DR. MAKHIJANI: Oh, I see.

DR. NETON: We -- You know, we didn't use them in our model. They're there to do comparisons.

DR. MAKHIJANI: I see.

DR. NETON: And now if we -- you know, we -- we never --

DR. MAKHIJANI: Okay.

DR. NETON: -- purported that these were going to be used --

MR. GRIFFON: Right.

DR. NETON: -- for anything other than a --

MR. GRIFFON: A check.

DR. NETON: -- a check.

MR. GRIFFON: Yeah. Yeah.

DR. NETON: And -- And so one asks -- asks the question how much do we go down that path then to validate data; then we have to validate another set.

MR. GRIFFON: Well, I guess -- I guess I would

say, Joyce, if you find a lot of these problems or, you know, maybe keep note of these concerns but the answer is no, the -- ORAU didn't -- and I don't know that they should have but they didn't attempt to validate that.

DR. LIPSZTEIN: Just one --

MR. GRIFFON: And as Joe said -- go ahead.

DR. LIPSZTEIN: Just one other thing. On the -- On -- You provided together with OTIB 49 a draft approach to those (unintelligible) for super type S material and there is a table here comparing lung and liver estimates through autopsy data. Is it possible to get which cases you got this, from which cases?

DR. ULSH: I think we had talked about that after the Y-12 conference call. However, they all kind of run together now. Joe, were you guys going to send over -- I can't remember what the action was. They were going to -- I think you were going to send over a list of ICD-9 codes that you were interested in and we were going to tell you the case numbers? Am I confusing a couple of issues or --

MR. FITZGERALD: No, actually you did send over the codes, the general codes and Joyce, you've

got the codes I think, and we're going to -- I think Brant's right. You were going to select which ones.

DR. ULSH: And then we pulled all the Rocky cases with those ICD codes.

MR. FITZGERALD: Right.

DR. ULSH: At least I can get a list of them.

DR. LIPSZTEIN: I don't honestly -- there's a table there with some autopsy data.

MR. FITZGERALD: No, no. There was a table of codes for the different cancer types and the -- the notion was to select from those codes which ones we want the data for.

DR. ULSH: That was in OTIB-5 I think, lists the ICD-9 codes and cancer types.

MR. GRIFFON: I think you're talking about the Super S. She's talking about the Super S.

DR. LIPSZTEIN: Yeah, I'm talking about the Super S.

MR. GRIFFON: It's called the Super S.

DR. LIPSZTEIN: There is a code, Super S, the ratio of lung estimates to autopsy measurements and the ratio of liver estimates to autopsy measurements and --

DR. NETON: Is that --

DR. LIPSZTEIN: -- because I don't know from which data they took, which list.
DR. NETON: It's not in -- well, there's TIB-49 and then there's a supplement to TIB-49 that we intend to use.
DR. LIPSZTEIN: Exactly, yes. It's on the supplement.
DR. NETON: Okay. I don't remember --
DR. LIPSZTEIN: That's when you -- you tried to build, when you were building that the -- the -- the Super S assumption is claimant favorable so you are comparing autopsy data with the estimate.
MR. GRIFFON: Super S.
DR. LIPSZTEIN: And I don't know from which cases they were taken.
DR. NETON: That was -- That was a handout I think at -- at a -- at a --
MR. GRIFFON: At the working group meeting.
DR. NETON: Yeah.
MR. GRIFFON: It's called approach to dose reconstruction for super type S material.
DR. NETON: That was a presentation. It's not part of any official document that we've generated. But I can -- I can -- we can find

that table and I can -- we can definitely get you the numbers or the cases that were --

DR. LIPSZTEIN: Okay.

DR. NETON: That was -- That was one of the last slides I presented at the Boston working group meeting but to my knowledge it was not incorporated into any of our -- our procedures.

MR. GRIFFON: And Joyce, you wanted to know from what cases that table was derived? Is that --

DR. NETON: Yeah.

DR. LIPSZTEIN: Yes.

DR. NETON: We can do that, yeah. I -- I guess I was confused because it wasn't in any document that we have. It was something I presented.

MR. GRIFFON: Yeah. Is it table -- which table is it, Joyce?

DR. LIPSZTEIN: It's the -- It's the -- It's table 2.

MR. GRIFFON: Table 2, I got it.

DR. LIPSZTEIN: The approach to dose reconstruction for super type S material.

MR. GRIFFON: Okay. We -- I got it here, yeah. I had to find it on my computer.

Super S.

DR. NETON: Yeah, we can get you those numbers.

DR. LIPSZTEIN: Okay.

MR. GRIFFON: Okay. So we still got some closeout to do with the comparisons but we think that probably by the Board meeting you'll have an interim report or technical memo related to this subject on Super S; is that --

DR. NETON: Yes.

MR. GRIFFON: Is that fair?

DR. NETON: Yeah.

DR. MAKHIJANI: But I didn't hear Bob say anything about the uncertainties on the -- on the measurements.

MR. GRIFFON: He did -- He did mention it a little.

DR. MAKHIJANI: I thought he was talking to the other case.

DR. BISTLINE: I didn't say -- say -- Yeah, I really -- Yeah, I -- I still feel fairly confident in the -- the other organs as well that were -- that were -- that the model is -- is probably overestimating and is -- is claimant favorable.

DR. MAKHIJANI: Yeah, but will you have some

discussion in this memorandum about the uncertainties and measurements?

DR. BISTLINE: I think --

DR. MAKHIJANI: That's all I want.

DR. BISTLINE: Okay.

DR. MAKHIJANI: In your work with Joyce will you address this question because it's come up and I think if we're going to put something to bed than all the issues that have come up --

DR. BISTLINE: Joyce --

DR. MAKHIJANI: -- be put to bed.

DR. BISTLINE: Joyce, you were -- you were planning on addressing that, too, weren't you? The --

DR. LIPSZTEIN: Yes.

DR. BISTLINE: -- other organs as well?

DR. LIPSZTEIN: Yes. I'm doing -- what I'm doing now is liver and bone which I think is the most important organs for our plutonium.

DR. BISTLINE: Correct.

DR. LIPSZTEIN: And so that's what I'm trying to do is liver, bone and lungs. That's the three systemic organs that I'm testing. And I think that if it works for those three organs it's okay. I'm a little bit concerned about

the thoracic but I -- I have to take another look at the thoracic corrections (unintelligible). But for all the others I can -- I'm pretty comfortable with it.

DR. ULSH: Just to clarify again. What you're talking about --

DR. LIPSZTEIN: I'm -- I'm talking about the (unintelligible) adjustment corrections for the thoracic region which is 49-plus the draft. There is an adjustment factor for the GI tract and there is adjustment factor for systemic organs and there is an adjustment factor for extra-thoracic.

DR. NETON: Right.

DR. LIPSZTEIN: And I -- I didn't check the extra-thoracic yet.

DR. ULSH: Just to step back for just a second though. The products that you're talking about, John, the interim evaluations I think they've been called. Super S might be one of them and there might be others. Are these issues that we agree that we can come to -- that we've come to closure on or are these other issues, too, or what?

DR. MAURO: My objective -- My objective --

and I guess this is really out for discussion -- is that the Super S issue is, as we can hear, has a lot of sub-elements to it. And as I -- as I'm hearing it a lot of those sub-elements have been put to bed. However, there are certain sub-elements that Joyce is still looking at which may very well be put to bed within a week. I don't know. So at a minimum -- at a minimum we will be able to deliver a status report that will come in written form to the working group shortly that will identify exactly where our position is yes, closed out. Issue -- Sub-issue number one, whate-- whatever they are 'cause there sounds like there's some texture here --

DR. ULSH: Right.

DR. MAURO: -- that -- and -- but -- where we can say right now yes, we agree.

DR. ULSH: Okay.

DR. MAURO: Then the methodology you proposed does the trick. But there are other areas that I'm hearing Joyce that would like to do a little bit more work. Sounds like extra-thoracic region, the GI tract; she mentioned one other that she's still checking. I don't

know, you know. My objective quite frankly is to be able to say here's a full list of issues and sub-issues associated with the high fired plutonium. Here's what we did to check them and here's what we found out. And maybe I'll be at the end saying we concur in the methodology. It is claimant favorable and scientifically plausible and -- and just move down each one of them. Places that we either have not had adequate time to check out or there -- we still have some questions, maybe things just don't seem to make -- ring true, we'll point that out also. I hope those are to the minimum. That'll be the next thing we deliver to the working group. Joe, please, if you think that way of looking at it is --

MR. FITZGERALD: Yeah, I think we might very well say that there's a specific piece of information that in the process of revealing it we discover we need but, you know, I think this is a process of converging. I think what we're saying is we're converging on this issue. We just want to account for how far that's gone. And we want to make sure the Board's aware of that.

DR. NETON: I think we ought to be careful. I'm -- I'm hearing now --

DR. LIPSZTEIN: I --

DR. NETON: -- in principle people are --

DR. LIPSZTEIN: I have -- I have another question for Jim, for NIOSH. What about the lymph nodes? Hello?

DR. NETON: Yes, this is Jim. I'm thinking. A three-day weekend. We -- The lymph nodes are included in -- as part of the lung model, are they not?

DR. LIPSZTEIN: No.

DR. NETON: Which lymph nodes are you talking about?

DR. LIPSZTEIN: The -- The one -- one -- you put the -- 0049 --

DR. NETON: Right.

DR. LIPSZTEIN: You've decided it wasn't valid for lymph nodes.

DR. NETON: Right.

MR. GRIFFON: That's right.

DR. LIPSZTEIN: And this draft, approach to dose reconstruction that complements 49 also doesn't touch on lymph nodes.

DR. NETON: I'm trying to think of what we did

with that now. I'll have to -- I'll have to get back to you on that. I just -- I just am drawing a blank right now. I know -- I know I've had these discussions but I can't -- I can't -- it can't come to me right now. What I was going to say earlier though I think is that it seems like we've -- the approach we've adopted seems in principle to have been generally agreed to. And then how far we go down this path of validating every single calculation seems to me to be sort of outside the realm of the SEC process. I'm just -- my -- my opinion. So whether or not the -- the GI tract model is sufficiently bounding or not is really sort of out of the realm of the SEC process. It's can we -- can we bound it, and not is it exactly correct. And so I hope that we don't start going down and validating every number here and delay the SEC decision because we're still worrying about, you know, certain approaches that might be a little higher than what we expected.

DR. BISTLINE: Let me say with regard to the lymph node issue that that's -- that's a touchy one because most people -- I was one of the

three prosectors for the U.S. Transuranium Registry, and when I did all my autopsies I dissected out the trachea-bronchial lymph nodes and the bronchial-pulmonary lymph nodes, which was a very tedious job. But -- And those were separated and counted separately but that wasn't always done by everybody else. And so some cases may have not had that separation of lymph nodes. But most of the cases that I did at Rocky did have that. And with the high fired oxide, for instance, on the case that I just mentioned the -- the lymph nodes was where a great deal of the trachea-bronchial lymph nodes was where a great deal of that activity was at. In fact Jim McEnroy (ph) did the -- the laboratory analysis of that and craft up these low level counting facility for about a year. It took about a year to recover so...

DR. NETON: It's -- It's tricky. I -- I'm just trying to think. It seems to me if you've got intake you can get the lymph node content though.

DR. BISTLINE: But it may be different on high fired oxide than --

DR. NETON: Yeah, it might be. I'm just trying

to --

DR. BISTLINE: -- because it's so insoluble that --

DR. NETON: Right.

DR. BISTLINE: That's where we really found a lot of the activity in high fired oxide.

DR. NETON: But then if they all go to the lymph nodes then the lung doses are way overestimated so you can't --

DR. BISTLINE: Yep. Yep.

DR. NETON: -- have it both ways as usual. It's either a lymph node dose or a lung dose.

DR. BISTLINE: Right.

DR. MAURO: Jim, I think this is important. Bob, in your opinion, given this -- this tension, where do you go, if you're looking at the dose to the lung as opposed to the dose to the lymph node? Now, what I'm hearing is that you folks have a protocol which will drive the two, if you happen to be concerned with a particular type of cancer, you're going to make the assumptions that drive it -- the worst case to that direction as opposed to the other. Now, have you had an opportunity to look at that, the way that -- those decision points and

you feel as if it's bounded on the lymph node side also? I mean or --

DR. BISTLINE: I haven't looked at it real closely, John.

DR. MAURO: It sounds like something we should look at.

DR. BISTLINE: I need to look at it a little bit more but I still think that the -- overall I think that the conservatism that -- that you folks have built into it is -- is pretty adequate.

MR. GRIFFON: I have a more general question, Jim. I think, you know, part of what we've been -- SC&A and I think I've been trying to do is to some extent pull the string on some of these things. I think we have to know when -- when enough is enough on that. But, you know, I don't think, like for instance the USTUR -- for instance we have to understand how they're being used so I don't know. I feel it is reasonable to consider that ORAU should have validated that data. But we also have to understand a little about -- a little more about how useful they are, you know, and so that's why we're pulling these strings.

DR. NETON: I'm not arguing with that.
MR. GRIFFON: Right.
DR. NETON: I'm just trying to keep a focus on --
MR. GRIFFON: I agree.
DR. WADE: Yeah, I think it's important Wanda be at the table when we have these discussions.
MR. GRIFFON: You're -- You're absolutely right, though. I agree.
DR. WADE: Because there is -- there is a tension. We've always lived with this tension of how much is enough.
MR. GRIFFON: Right.
DR. WADE: You know, NIOSH has presented a petition evaluation report to the Board. The Board has not acted upon that petition evaluation report. The Board will have to face that in June and if it doesn't decide in June it'll have to deal with that in September. I think it falls to the Board members on this working group to make the decision as to how you're going to drive this process. I would ask you as a designated federal official that you keep in mind always this tension that that -- where it's really your judgment call that

needs to be made here and -- But again sometimes we look at an issue technically and it's so fascinating to us we want to spend a great deal of time. I would ask you that you keep your mind on the overall process as well because in time if you don't decide on Rocky Flats at this meeting or the next meeting we'll start to face significant amounts of pressure, the Board will. And so I mean you have to really take that into account. But that's for the Board members to act on.

DR. MAURO: When Wanda gets back there is a question I'd like to ask Bob which is posed I think along the lines that we'd like to craft it. I -- I guess right now our main concern is in principle could you envision that by picking the proper parameters you will be able to place a plausible upper bound? Now, there may be some disagreement about what the optimum parameters are based on the data. The data -- you looked at a certain amount of data so far and in your judgment what I'm hearing is that the lung into the systemic organs, there certainly appears that it bounds -- so -- in a way not only you -- you also -- you've come to

a place where you believe that it's a plausible upper bound, if not conservative. Now we -- we raise the question I guess of lymph nodes in the thoracic region and in principle do you visualize that you can come up with an approach that would, for those individuals that have suffered from that condition, do you envision that the basic methodology be employed and developed by NIOSH could in principle deal with that? Or do we -- or are there some underlying issues that would prevent a plausible upper bound from being placed on that particular organ dose? Do you see what I mean? As opposed to trying to find what the right number is, is it plausible to accept that? Because, see, I notice that we're spending a lot of time trying to decide what's the best assumption to make to get the best number. I think I -- what we're all more interested in is do we have a process that -- that you can find a plausible upper bound that gives the benefit of the doubt to a particular claimant for his particular cancer.

DR. BISTLINE: I think that's something that maybe Joyce can answer better than I can at

this point. She --

DR. LIPSZTEIN: The -- The only thing that -- is that we don't have the upper bounds for lymph nodes. NIOSH didn't give us -- they gave us for thoracic, for extra-thoracic, for GI tract, and it said it doesn't apply to lymph nodes so I'm asking what about lymph nodes.

DR. NETON: We -- We could answer that.

DR. LIPSZTEIN: The upper bounds for NIOSH.

DR. NETON: Rather than speculating on an answer I'll get -- I'll get the real answer.

DR. WADE: Wanda, while you were gone we had a discussion just about as to how much is enough discussion and I wanted to have a little bit of that with you here also. I mean if you step back on the Rocky Flats SEC petition you look at the broad issue. NIOSH has presented a petition evaluation report. The Board has decided at its last meeting not to vote. And now we'll have to, at each meeting, we will have to come to that decision again. As a designated federal official, if I felt compelled to instruct the Board that I felt that it needed to vote more than it was out of bounds in terms of this issue I'll do that. I

don't think that's the case but what I would say to the Board members on this working group is you need to always sort of keep that -- that process in mind. You should have a sense of how much effort you want to spend in going deep in some of these issues to make sure that you -- you in a timely way bring a recommendation that the Board can indeed vote on.

MR. GRIFFON: Right.

MS. MUNN: And it is a major concern of mine because these types of issues that we deal with here are issues that any one of us could make a life work of if we so chose to do that. We simply cannot afford to do that, neither in terms of time for the claimants' sake nor in terms of -- of reasonable approach to the issues. So how much is enough is a thing that I think it's imperative the working group come to an agreement on. Otherwise we can't have a very firm recommendation to give to the Board. And those Board members who have not been privy to the kinds of discussions that go on here are relying on us I believe to make that very decision.

DR. WADE: And let me say for the record that I

think the process that you all have engaged in is outstanding. I think it is an appropriate process. I think it's just a matter of deciding how to manage is all. So maybe -- and I don't think we're out of bounds at all. It's something for you all to keep in mind as you sort of move forward in this.

MS. MUNN: My -- My sense is we're nearing a point where we have to make some of these decisions, whether we're -- whether everybody is completely happy with them or not.

DR. MAURO: I'd like to take it a step further. I think NIOSH has come up with a strategy to dealing with a situation where ICRP does not have models but we do have empirical data. And -- And it sounds to me that we have enough empirical data so that if we could look at enough cases we still have to get to the point where you believe that there are adjustment factors that could be applied. And this is really what it comes down to. There are adjustment factors that could be applied to the models so that you can bound what the dose might be to any particular individual, any particular cancer. This is in essence what

we're talking about. The particular value you pick, and the -- it's almost -- it's almost like secondary to the SEC issue. In my mind, I mean I don't know if anyone agrees with it but in my mind, in a way, once we all have embraced the philosophy that yes, going to these real data for real people in the transuranic registry and looking at and testing the strategy against them and saying yeah, it looks like it works, I think we're there. Now, what I'm hearing is there may be some questions regarding some particular organs with, you know, the lymph nodes and whether or not they pick the best strategy. But once you buy in on the idea that you can do that and the data exists out there at a level of precision that doesn't leave you out in a void where you really can't -- don't know what to pick, to me we're -- we're beyond the SEC issue then. I mean the SEC issue has been solved. Now, it may rear its ugly head again during site profile review. I'm not sure. It seems to me that what we've done to date is not only engage the SEC issue as best we can, but we have gone a long way toward engaging the site profile

aspects of this issue also. And I think we're -- we're trying to find a place where we're all comfortable; where we can say, okay, I think we can put this SEC part behind us and where we have a little bit more to do. The only thing I heard out of this discussion so far includes -- correct me if I'm wrong -- is that there's still a little bit more room for discussion regarding the lymph nodes. Other than that --

MR. GRIFFON: I mean I'll correct you a little.

DR. MAURO: Please.

MR. GRIFFON: Only a little.

DR. MAURO: Please.

MR. GRIFFON: But Joyce said she was going to do more work on the USTR cases, too. She's done three.

DR. MAURO: Okay.

MR. GRIFFON: So so far, you know, it looks conservative and we all agree with that.

DR. MAURO: Let me take you --

MR. GRIFFON: You want -- You want complete data.

DR. MAURO: Well, let me -- let's -- let's say Joyce looks at a -- a number of additional cases and ah, holy mackerel, you found one

that's worse. Let's say we run into one that's worse, okay? A factor of four isn't good enough. Where does that put us? Does that mean we use a different factor number?

MR. GRIFFON: And then you'd -- and then you'd run into that question of plausible, too.

DR. MAURO: And -- And plausible.

MR. GRIFFON: Don't start just throwing factors around.

DR. MAURO: This is -- you see where we're going. This is a very strange place where -- where -- where I think that you guys picked a strategy that to date seems to work and -- and -- and gets us to an upper bound that you still feel is plausible but probably conservative to most people but plausible for some. Okay. One of the --

DR. BEHLING: Can I make a comment here?

DR. MAURO: Yes.

DR. BEHLING: Regarding the lymph nodes I was looking through some of the ICRP documents and at this point while they didn't give a definitive number they did in fact make comments such as the thoracic lymph nodes would probably experience a dose that was at least

equal to or possibly greater than the lung. Therefore the lung may serve as a surrogate organ for estimating doses to the thoracic lymph nodes as a default value.

MR. GRIFFON: Well, let's not -- Jim has an answer for this so I think we'll just wait for him.

DR. NETON: And that was my thought, Hans, you know. If you can get to intake, then if you put all the activity into the lymph nodes you bound it. I mean --

DR. BEHLING: Yeah.

DR. NETON: You can't have it both ways but you can certainly say it's all in the lymph nodes I mean if you can believe our intake estimates.

MR. GRIFFON: And just to respond to -- to -- to John's thing. I think -- I mean I think we're all seeing the same thing. I think we're converging on this as Joe said. And I don't think, you know -- I think we just need to carry it through the last look at the design cases, looking at a few more USTR cases and then -- and then having an interim report. And, you know, I think we're -- I think we're close on all the sub-issues under this even.

But I think we need to, you know, complete that component anyway. And I, you know, I think that's where it has -- where we have to take it. I don't expect any -- any -- I don't know. I -- I mean I think we just carry it on through.

MS. MUNN: I would feel more comfortable if we had, for example, agreed on a general number of -- of cases that we would feel comfortable having Joyce review. I don't -- This again is the how much is enough issue.

MR. GRIFFON: Well, there's only so many high fired plutonium cases. How -- How many --

DR. NETON: Transuranic Registry has got a lot of --

MR. GRIFFON: A lot of them?

DR. NETON: A lot of plutonium cases. I mean there's a lot out there. See, I thought that -- -

MR. GRIFFON: Yeah, I mean --

DR. NETON: -- at the last Board meeting Joyce had compared this model against Eckerman's model, some Mayak models. It turned out we were more favorable. I thought that was the end of the issue to be honest you. And now

that we're going back into the Transuranic Registry and validating cases that's fine I suppose --

MR. GRIFFON: Yeah.

DR. NETON: But again, how far do we want to go here? And like John said, it's quite plausible there's going to be one analysis that's going to maybe be an outlier maybe just based on purely statistic -- for purely statistical reasons as an outlier and then where does that leave us? I don't know.

MR. GRIFFON: Well, I mean --

DR. NETON: In cases pick the highest, the most dose --

MR. GRIFFON: I think where we left it at the last Board meeting was that the analysis quite frankly didn't go beyond the TIB's. I mean that's where Joyce stopped and we just asked her --

DR. NETON: (Unintelligible)

MR. GRIFFON: (Unintelligible) certainly case data and that's where it ends I think.

DR. NETON: She cleared the ICRP models already that Eckerman's put out, and postulating --

MR. GRIFFON: She did that model to model,

right. Right. She did that.

DR. NETON: -- Which is based on real data as well --

MR. GRIFFON: Right.

DR. NETON: So you've got two cases of real sets of data and now we're going back and looking at the transuranic... It's fine. I mean I certainly --

MR. GRIFFON: All we ask is that, you know, you cite those in your TIB and I guess I pushed this -- this issue maybe but all I said is let's look at the design cases and -- and -- and some USTR cases. I think it's fair to ask how many, you know, and that's why -- and I was kind of leaving that up to SC&A and Joyce to kind of -- but I agree we need an end point on that.

MS. MUNN: Yeah.

MR. GRIFFON: I don't, you know --

MS. MUNN: And the other issue --

MR. GRIFFON: I don't want -- I don't want them to look at every USTUR case.

MS. MUNN: And the other issue is so there's an outlier.

DR. NETON: Right.

MS. MUNN: Do you know of any data set that doesn't have outliers? You know, just because you encounter one or two still does not indicate that there is a systemic problem with any of the data that exists in the uranium -- plutonium uranium registry.

MR. GRIFFON: This is just this level of thoroughness I guess that we have to grapple with as a work group that, you know, my feeling is that if -- if -- if you find like these -- these unusual things that I found in the cases, Roger -- Roger had explanations for them.

MS. MUNN: Yeah, he told you.

MR. GRIFFON: And that's good. And now we have to weigh those. And the same thing with USTR cases. If you have a lot of cases that Joyce looks at that have a lot of abnormalities then you start to maybe be concerned. But on the other hand that's only being used as a comparative -- it's not used in TIB 49 necessarily. You're comparing against that so, you know, I don't even know if that's a big thing but, you know, I guess that would raise questions.

DR. NETON: I guess I would argue these are all

Rocky Flats cases. The design model is based on all Rocky Flats cases.

MR. GRIFFON: Right.

DR. NETON: So that -- that's the best population you can use.

MR. GRIFFON: Yeah.

DR. NETON: Now, if you find some other -- other -- other --

MR. GRIFFON: Well, actually the Hanford cases --

DR. NETON: Well, the -- No, the Hanford case was just one; they were equal.

MR. GRIFFON: Just the one case.

DR. NETON: They were equal to the Rocky Flats design case and so -- but then you find some ceramicized plutonium at Los Alamos that may behave slightly differently. I'd say at this point --

MR. GRIFFON: I mean I guess -- I guess the way I would say, I still think maybe we'll leave this to some extent to SC&A of how many USTUR cases to take back but with the understanding that we'd like an interim report on this issue before the next Board meeting so that kind of dictates how -- how many they're going to do.

They’re not going to spend all their resources in the next two weeks delving into this. I think Joyce is going to say I’ve looked at three or four more; they’ve all -- you know, they’re all conservative.

MR. FITZGERALD: Do you have any --

MR. GRIFFON: Let’s write an interim report and be done with it, you know.

MR. FITZGERALD: Joyce, do you have --

MR. GRIFFON: That’s just where it’s going to go.

MR. FITZGERALD: Joyce, do you have any sense right now -- I think you were saying into next week. How many cases do you see in that?

DR. LIPSZTEIN: I -- I don't know how many because I have -- I’m now looking just at the highest ones and I think I -- I’m going to just look at the highest ones because the model that is proposed is not really a model. It’s an -- it is a like adjustment factors instead of models which is okay. No problem with that. But based on the higest possible amount in system -- in the lung. So I have to look at the -- the highest lung burden that have in those cases and I think that Bob is now helping

me to choose the -- will help me to choose the cases. He just gave you the one that was the -- the worst exposed person to look at. And then that's like I'm doing now so I think we -- we -- I feel pretty comfortable for -- for now with -- with the -- the -- with the adjustment factors that were proposed. I didn't see anything that was against it, you know. All of the data are favorable to the -- to the proposed adjustment factors.

MS. MUNN: Yeah, boy.

DR. LIPSZTEIN: And now everything is good and as Jim said, I -- if I compare Eckerman's model for Mayak and these adjustment factors, the adjustment factors, these are much higher dose and a much higher content in organs than the Eckerman's model. In Mayak they had very, very high exposure, probably higher than at Rocky Flats.

MS. MUNN: That certainly should get us into bounding cases. Yeah. Thank you, Joyce.

MR. GRIFFON: All right. So I think, you know, we don't know exactly how many more cases but it's not going to be all the cases certainly.

DR. MAURO: What we're gonna do --

MR. GRIFFON: Right.
DR. MAURO: What we'll do is we're going to --
MR. GRIFFON: Some of the highest ones.
DR. MAURO: We're gonna show you what we have and deliver a report in a timely fashion --
MR. GRIFFON: Right.
DR. MAURO: -- so you'll have a chance -- the working group will have a chance to look at it. You'll see how many cases we looked at and -- and you'll also have a sense whether, you know, that's good enough, too. Rather than say how many we're going to do --
MS. MUNN: Yeah.
DR. MAURO: -- we're going to do as many as we can within a relatively short period, a time period that will allow --
MR. GRIFFON: Right.
DR. MAURO: -- you folks to deliberate a bit before the Washington meeting.
MR. GRIFFON: And use your judgment on your resources.
DR. MAURO: And where our resources should go.
MR. GRIFFON: Right. Right.
MR. FITZGERALD: I think the key thing is to manage that issue --

MR. GRIFFON: Yeah.

MR. FITZGERALD: -- such that it makes sense.

MR. GRIFFON: Right.

MR. FITZGERALD: There's a rhyme or reason for what we're doing.

MR. GRIFFON: And are we done with this Super S issue? I think we're done for now. We're going to get the interim report and Jim's going to follow up on the one lymph node issue. Can I ask for a comfort break? I know some people have been walking away but I haven't been able to. So maybe just ten minutes and we'll reconvene in ten minutes.

MS. MUNN: Fine.

(Whereupon, a brief recess was held from 11:25 a.m. to 11:40 a.m.)

NEUTRON DOSE RECONSTRUCTION

MR. GRIFFON: Okay. Everyone on the phone, we're reconvening now. A little more than 15 minutes but Ray was a little late again.

(Group laughter)

DR. WADE: Let the record show.

MR. GRIFFON: These are casual. These are working groups, right?

THE COURT REPORTER: That's right.

MR. GRIFFON: We're going to move on to the second item, neutron dose reconstruction. And Joe Fitzgerald, the SC&A team just handed out a -- an analysis -- internal draft of SC&A's review of external dose issues and NIOSH's evaluation report. So this -- this is going to overlap from what I understand some neutron issues but also it might get into some of the external dose data reliability questions.

MR. FITZGERALD: Yeah, let me preface first off, certainly apologize for just handing this out. Ron's been working this issue for a couple weeks and we were trying to get a -- some information together for this discussion today. And I thought it would be helpful to have what he's produced as far as a working draft available as he talks through. I think he's done a good job of frankly distinguishing what we think are some questions. I wouldn't call them issues but questions that have SEC implications, being data reliability implications from that which I think we have settled out in past meetings. We're not going to revisit those. He identifies them. This is sort of a -- a pre-piece for the evaluation

that we're going to generate so if they're in here we're not going to bring them up. They're just cataloged as issues that have been resolved. And these also get into external -- external dose assessment. This piece covers I think the waterfront as far as the external dose side goes, the co-worker dose model and all the rest. So I'm going to turn it over to Ron to kind of focus really on the questions that I think you've developed in this analysis that deal with issues that might have some SEC implications if in fact they're borne out as uncertainties or areas where the data may be in question. So we're going to just focus on that and not get into the other items that are in this piece. But for completeness you have it all at this point.

MR. BUCHANAN: Okay. Okay, Joe. Do you want me to just go down the -- on the main ones that I feel could have SEC implications?

MR. FITZGERALD: Yes, please.

MR. BUCHANAN: If you read through this five-page summary, like Joe says, a number of these issues we've addressed in the past and we -- SC&A had some questions on them. We came back

and chewed on some of them and have addressed them to our satisfaction that they'd probably be site profile issues; however not necessarily SEC issues. Now, there are two items though that we still struggle with as far as SEC -- possible SEC issues and that's two items and I'll identify those, and perhaps we can discuss them and see how we could resolve them. Number one is the fact that on page one, table 1 -- might be page two on your report -- we see that in '69 and '70 we had a number -- a higher number of zeros in our data entry than we did the previous or the following years, 36 percent for the average of ten percent. That's one major issue I'd like to address. The other major issue is that I looked over the -- the O-TIB's 58 and of course the related O-TIB's 50 and NDRP report, and the question, the main concern I have with there is the earlier data. Now, I did go see on the O-drive you posted some I think around the first of -- in April on the -- some real data for individuals for '52 through '05. I looked at that data and the problem is it doesn't separate out the neutron and photon dose and I need to look at the

neutron dose and photon dose separately to see how many neutron -- how much measurements was done in ’52 and ’53, ’54, ’55 with the neutron doses and what departments those were in to determine if we can reconstruct the dose. And so those are the two issues I’d like to address today. Now, does anyone or has anyone looked at or anyone could explain why the ’69 and ’70 data entries were so many zeros compared to the previous or the post-era?

DR. ULSH: Well, my first reaction, Ron -- this is Brant Ulsh, and I’m going to rely on Roger and maybe Bob to talk about how credible or incredible this might be, but the big fire occurred in ’69 and that pretty much ground production activities in the plutonium building to a halt after that fire and during the cleanup stage. And those production workers were reassigned to I believe the 850 cafeteria. I had a conversation with Bob over the break. And so you might expect that their doses would be -- those are some of the higher dose people but those doses would be low or zero. Now, I don't know, Roger and Bob, does that sound like a credible scenario or --

DR. BISTLINE: Roger, what's your thought on thought -- thought on that?

MR. FALK: Yes, that is -- that is credible. That would be the workers who were actually assigned to building 7 -- 777 and 776. And they were -- they were stationed there until they could be reassigned to -- they -- until they could be reassigned to other areas. But yes, they -- some of those workers were there for -- for probably -- for probably several months.

MR. BUCHANAN: Wouldn't have this been -- now, see, I guess the fire was like in the second quarter of '69. Would have this extended in through the year 1970? You know, would it -- would it last say six quarters of this reassignment with no plutonium work?

MR. FALK: That is possible for some of the workers. Also keep in mind in the summer of 1970 there -- there was a strike in the summer. I'm trying to recall when it was. It was probably for a month or two so that was another discontinuity.

DR. ULSH: The only other event that comes to my head, and I'm not sure that it would be

relevant to this, is the transition from film badge to TLD. That occurred right around this time frame, too, didn't it, Roger or Bob? But I can't see why that would impact the number of zeros. I'm just saying that that was --

MR. FALK: Yeah. We -- We -- We converted the -- the plant to the beta gamma TLD's in 1970 but I don't think that would really affect these zeros.

DR. BISTLINE: That would be my feeling, too, Roger.

DR. BEHLING: This is Hans Behling and I do have a comment on that issue. And is it possibly that the duration of the wear period was shortened significantly, especially when you have a radiological crisis that you're concerned about and the potential for exceeding admin limits et cetera, that oftentimes what happens is that you assign daily batches or go from monthly to weekly or very short duration meaning that if these people were exchanged very quickly and -- and frequently that you would have a series of batch cycles that simply never reached the -- the limit of -- of detection. And therefore you end up with a

quarterly dose that is zero.

DR. ULSH: Well, that sounds credible to me but I don't know --

MR. GRIFFON: Is -- Is -- Actually -- I guess I'm just wondering if there's a way to take this to -- to completion. Is there any way that we can check -- I don't recall if the database has information on the building that we could see, building 777/776 and compare before and after the fire time frame and see if the number of zeros is -- is consistent or if it increases as that might -- that might support your scenario. But I don't know if that information exists in the database even, if there's building -- I kind of doubt it actually.

DR. BEHLING: It's not --

DR. MAKHIJANI: Well, Mark, it may not be a question of zeros. Kathy Demers found that there were gaps, nothing in the individual dose records from those years for deep dose I think. Is that what you were saying, Joe?

MR. FITZGERALD: Actually I think -- I think it was no data, wasn't it?

DR. MAKHIJANI: No data.

MR. GRIFFON: But that could mean they were reassigned.

DR. ULSH: I don't know. We were looking at this last week. Kathy identified two individuals, and I would caution everybody, you may have to respect privacy acts. There were just two individuals that we looked at their RAD files and they appeared to have, you know, results for all the years prior to and after 1969 but there was just nothing there for 1969. As of now I don’t have an explanation for that. We are looking into it. Unless anything has happened over the weekend, any -- any of my team members out there?

(No response)

DR. ULSH: Okay. I think at the end of the last weekend it appears to be the case now. We didn’t yet have an explanation for it so we are still looking at that.

MR. BUCHANAN: Okay. I have a question. Is Joyce still on the line?

DR. LIPSZTEIN: Yes, I am.

MR. BUCHANAN: On any of the bioassay did you see the same scenario there? Did you have more zeros or less MDA’s there in ’69 and ’70 than

you did the prior or following five year or have you looked at that?

DR. LIPSZTEIN: I didn't -- no, I didn't notice anything. No.

MR. BUCHANAN: Okay. Could -- Could you -- Joyce, how much of a job would it be to send me this -- a summary like I have? Do you have a copy of what we're talking about in front of you?

DR. LIPSZTEIN: No. No, I don't.

MR. BUCHANAN: Okay. I could send you this and ask if you could do a quick compilation and see if -- if the internal dose fills a similar pattern or not.

DR. LIPSZTEIN: Okay.

MR. BUCHANAN: Okay.

DR. LIPSZTEIN: I'll do that today.

DR. BEHLING: This is Hans again. This is a question for Ron. Ron, are the doses for those years prior to '76 still only quarterly doses that we assume were the composite of multiple cycles possibly of expo-- of monitoring?

MR. BUCHANAN: Those are -- those are, yeah, yearly doses. Just the sum of the total penetrating yearly doses.

DR. BEHLING: But they were reported as quarterly doses prior to ’76; is that correct?

MR. BUCHANAN: I think so. I'm not sure exactly how they were recorded. If there’s -- I’d have to look up the database but I think that that’s true. Some of them were annual doses and some of them were by quarter.

MR. LANGSTED: This is Jim Langsted. Dosimeters were changed on a variety of frequencies during those periods. The problem is that the data was rolled up into quarterly totals which is the only thing that survived in the database. It’s not true to say that -- that the data was reported on quarterly basis -- a quarterly basis. That’s just all we have at this point.

DR. BEHLING: Yeah, and that was my -- my -- my statement is that during a radiological crisis oftentimes what happens is that you do tend to shorten the wear cycle to a much lower -- shorter period meaning that you’re likely to report more frequency -- higher frequency of below LOD readouts meaning that you may have a person who is -- who is monitored weekly now and you just have 52 or 13 zero recordings for

a quarter meaning that he ends up with nothing because of the fact that he was monitored on a weekly basis instead of a monthly or quarterly.

MR. BUCHANAN: I could see that in 1969. I don't know if that sort of crisis would have extended all the way through ’70 though.

DR. BEHLING: Well, the question is to what extent were some of these workers used for cleanup?

MR. BUCHANAN: I don't know.

MR. GRIFFON: So we -- we -- we’ve put the issue out there. I think -- I don't know that we can take, you know -- we can speculate here all we want but I think we need to look into this issue.

DR. WADE: Do we have a new member of the team at the table?

DR. ULSH: Yeah, I’ll introduce him. This is Craig Little. He just arrived. He is part of the ORAU team. I guess we’ll do the normal conflict. I don't think you have any conflicts.

MR. LITTLE: I have no conflicts with Rocky Flats.

DR. ULSH: Craig is sitting in for Bob Meyer

who is the TBD team leader, and Bob is out of the country right now.

DR. WADE: All right. Thanks.

MR. BUCHANAN: I did have a question. When we were talking about what's available on a yearly or a quarterly basis. Can someone answer the question, do we have the quarterly records all the way back to '52 or some of those yearly doses?

DR. WADE: Could you repeat the question, please?

MR. BUCHANAN: Do we have the quarterly doses available all the way back to '52 or are some of those only available on a yearly basis?

MR. LANGSTED: Well, I believe some of the early data was -- is only available on a yearly basis. This is Jim Langsted.

MR. BUCHANAN: Okay.

MR. GRIFFON: And Ron, did you -- to go back to the other primary issue that you raised or question that you raised, was that on the rolled up data and how to separate up a neutron and gamma? Was that your other -- other primary question or -- or --

MR. BUCHANAN: Yes. The second of the two main

issues was the ’69/’70 zeros and the second issue was on the ’52 through ’57 especially when they used mainly the neutron track plates rather than the MPA film. I need to be able to look at the details of the neutron dose each year, individual. I don’t need their Social Security number or anything but I need how -- how many neutron measurements were actually reconstructed during the NDRP project for each year and hopefully some kind of identification with them and then building number because I need to look to see the validity of their intake neutron dose. See, because in O-TIB’s 58 which created table 7-1, and we get a 50 and a 95th percentile on the penetrating dose which is neutron plus gamma and I need to look at the details of the neutron dose on that and what’s the present data on O-drive does not have that broken down. And so what I’d like to know is can -- can that be provided so that I have the neutron -- individual neutron and gamma results for each year and the building number?

DR. ULSH: Now, is that from the NDRP that you’re talking about, Ron?

MR. BUCHANAN: Well, no, this is -- it’s

summarized in O-TIB's 58 in table 1, and it lists 1952 through 00 -- 2005, the penetrating dose, the 95th and the 50th percentile. And on the O-drive they post it, the composite dose but there's no separation of the neutron and gamma dose. And what I need is table 7 -- what I need is the individual doses, like there was like 42 doses or something recorded in 1952. I need to be able to go in there and look at what the neutron component was and what the gamma component was for each worker for that year. And the -- especially '52 through '57 when NTP plates were used.

DR. ULSH: Okay. I think I understand what you're asking for, and I will try to get that for you.

MR. BUCHANAN: And if --

MR. FITZGERALD: You're really working off table 7-1?

MR. BUCHANAN: Right. I need -- I need to break down 7-1 to see the details. I want to see how many neutron monitoring say was done in 1952 or 1953 a year to see if the number they give here is -- is valid, you know. If there was just one measurement, well, this number

isn’t very statistically valid. If there was 100 measurements it’s useable. And I need to see what the numbers were, what the range were and what buildings they were in because I’m concerned about 771, if there was any badging, even empty plates in those in the early years.

DR. BISTLINE: Roger, do you have that information on those 18 people that had neutron badges between 1951 and 1957?

MR. FALK: Well, that’s probably part -- that’s probably part of the NDRP database.

DR. BISTLINE: Yeah.

MR. FALK: But I’m thinking -- I’m thinking that all of this might be moot because -- because the NDRP data would basically take precedence over the old data, especially for -- especially for -- especially for the -- the neutrons.

DR. MAKHIJANI: Which -- Which data? Sorry. I did not get that, Roger.

MR. FALK: The NDRP data.

DR. BISTLINE: We’re talking dose reconstruction data because there were only 18 -- 18 people that were monitored from 1951 ‘til 1957, neutron monitored. And -- And that was

figured into the NDRP study.

MR. FALK: Well, Bob, that isn't quite right because there was only 10 to 20 people monitored per month but -- but the list could really vary from month to month. And so it is more than just 18 or 20 total people.

MR. BUCHANAN: Yeah, that was just for building 771 I understand. I understand that there were 657 neutron plates re-read between '51 and '57. Is that right, Roger?

MR. FALK: That is probably correct. I don't have the -- the number but it sounds right.

MR. BUCHANAN: Uh-huh. There were 7-- 757 but only 657 were readable or something. And that's the results I'd like to see because we're going to assign dosage here using the results of those 657 plates between '52 and '57 and I need to see the details of that rather than the NDRP or if it's, you know, like table 7.1. I realize 7.1 was taken from the NDRP. I do not have access to -- to look at those on a breakdown basis.

MR. FALK: Also keep in mind the workers who were monitored with the plates were not from building 71. They were from building 91.

DR. BISTLINE: Yes.
MR. FALK: Right?
DR. BISTLINE: Yes.
MR. FALK: For the 18 or whatever that number was in ’56 and ’57.
DR. MAKHIJANI: But Roger, I thought that no people from the 71 building were monitored up to ’57; is that correct? Or ’65 -- what was the year?
MR. FALK: The year is 1957 when they started to -- to use the NTA film. But I don't think any building 71 person was monitored with the glass plate method.
DR. BISTLINE: I don’t either.
DR. MAKHIJANI: So how do we get to the neutron photon ratio for the ’52 to ’57 period?
MR. FALK: You back extrapolate from the year when we do have data which is actually 1959.
DR. MAKHIJANI: Assuming that all of the working conditions were the same, so that’s sort of of a --
MR. FALK: That is a basic assumption.
DR. MAKHIJANI: Right.
DR. ULSH: Or at least the conditions that would affect the neutron to gamma ratio.

MS. MUNN: Uh-huh.
DR. MAKHIJANI: Yeah.
MR. BUCHANAN: Yeah. And the neutron energy spectrum. If -- If we didn't have any -- if we only had 18 badges in '56 and '57 at building 71 then we're going to have to use the neutron plate information for the earlier years for that building. And we have to assume that the neutron energy spectrum was similar between the other buildings and 71 during earlier years. Would anybody care to comment on that?
MR. FALK: Well, yes, it turns out that -- it turns out that I don't think you would use the neutron plate data which is building 91 to -- to determine neutron gamma ratios for the building 71 workers. Those ratios still need to be back extrapolated from the 1959 data.
MR. BUCHANAN: Okay, Roger. What about the actual dose? According to table 7.-- 7-1 we're going to use the neutron plate data from building 91 to assign unmonitored doses to building -- workers in building 71 during the early years when they weren't monitored. Do you have comments on -- on the difference -- the similarity or difference between the -- the

neutron doses workers would receive in ’91 compared to ’71 during the early years?

MR. FALK: I would think they’re -- they’re likely to be different and I’m kind of surprised that -- I’m surprised that the O-TIB 58 has that statement in there. That is not what I would recommend.

DR. BISTLINE: Yeah, those processes were totally different in 71 -- in building 71. That was a chemical process with fluorination associated with it. In ’91 it was -- it was final assembly of components and that -- and so there -- there’d be a total -- I mean a total disconnect there.

MR. GRIFFON: Ron, can you give us a reference in O-TIB 58 what page that’s on and --

MR. BUCHANAN: Okay. Is anybody there that’s -- that wrote 58 or is more familiar with it that has detailed information on it? We understand O-TIB’s 58 is that they’re going to use table 7-1 on page 10 to reconstruct neutron doses to all unmonitored workers at Rocky Flats throughout the years, so 1952 to 2005. And that -- they give steps one through five in section seven from page eight and nine and then

the final table on 7 -- 7-1 and 7-2. 7-2 is the gamma only and the 7-1 is the composite neutron plus gamma. You know, correct me if I'm wrong but I understand the use of table 58 is -- is for everybody that worked at Rocky Flats during those years and that would include building 71 which did not have any neutron monitoring per se other than maybe 18 total plates. So they would use -- be using the neutron track plates from building 91 to do a co-worker model dose.

DR. ULSH: Unfortunately, Ron, I think you're probably the one person around the table or around the call who knows more about TIB 58 than anyone else. The guy who wrote this I think is Matt Smith.

MR. BUCHANAN: Correct.

DR. ULSH: He is not on the call.

MR. BUCHANAN: Uh-huh.

DR. ULSH: So I'll have to follow up and get back to you --

MR. GRIFFON: Follow up on this, okay.

MR. BUCHANAN: Okay.

DR. ULSH: On that question.

MR. BUCHANAN: That's the way I understand O-

TIB's 58. Now, you know, if that's not right, well, then I would be willing to re-evaluate it but that's the way it looks to me at this time.

DR. ULSH: Okay. Yeah, we'll follow up on that and -- and get back in touch with you.

MR. BUCHANAN: Okay.

MR. GRIFFON: And Ron, in your document, because we all just sort of got this real time here --

MR. BUCHANAN: Uh-huh.

MR. GRIFFON: -- is there anything else -- from an SEC standpoint I should say is there any other issues that we should discuss now?

MR. BUCHANAN: I believe that those were the two main issues. If -- As you look through there I think that most of them I feel at this point the SC&A -- the information SC&A has obtained to this point. That most of the other issues are site profile issues instead of SEC issues.

MR. FITZGERALD: That's why I put working draft because again we haven't had a chance to really hammer this out internally but just for the purposes of this meeting this is where we are, this stage.

DR. MAURO: I'd like to pose the question -- this is John Mauro -- so we have these two issues before us. To step back, what I'm hearing is there may -- there may be some good reasons why, let's go with the first one, all right. The first one with the high percentage of zeros. And we heard some reasons of why there might have been a high percentage of zeros. Now, but the reason we're raising this is because there's a data reliability question here. And I'm trying to draw the bridge, okay. Let's say we have a couple of years where you have for some unknown reason or a speculative reason let's say, a high percentage of zeros. Now, what I'm hearing is somehow that brings into question data reliability with the implications being can you build co-worker models? Can you fill in the gaps? Can you trust the data? Are we concerned about those two years because they have implications for other years? Or are we just concerned with those two years? You see, I guess when we're talking data reliability, when we're around a table talking SEC issues, I want to get to the place that says, listen, ultimately we are

seeing something. It's almost as if the -- a tip of an iceberg. Are we concerned that this is an indication that there might be some underlying problems with the records or -- or are we, you know -- So I'd like to hear a little bit more about what the, you know -- what the possible implications are of both these issues in terms of being able to do reliable dose reconstructions. And being as more -- as much for my benefit because I -- I like to look at it from the dis-- from a distance and where this might take us. And what we might be able to do to perhaps not solve the problem explicitly but at least get to the point where we feel that it's a tractable issue. Right now I'm not quite sure where we are with regard to these two matters in terms of how they may affect our ability to do dose reconstructions. Can somebody help me out a little bit with that?

MS. MUNN: That's a very good question from my point of view as well. Particularly when I look at the entire table and see that there's nothing at all unusual about the 36/37 percentile if you take the whole table into

consideration. It doesn't say anything about it because it's outside the scope of the SEC, the other -- the others. But taken as an overall view of the data that's available to us there's nothing at all unusual about those numbers. It's only within the SEC time framework that they seem to stand out. So --

MR. GRIFFON: Well, the SEC is the whole --

DR. ULSH: It spans the entire operating essentially the same.

MS. MUNN: So if you look at the whole table you'll see further down many years where the number of zeros exceeded 35/36 percent. And of course you would anti-- I would anticipate in in the final years when production was shut down and cleanup was underway. I would anticipate that.

MR. GRIFFON: Right.

MS. MUNN: But during as long as you're talking about operation then there's nothing really outstanding about that unless we're trying to tie that --

DR. MAURO: Uh-huh.

MS. MUNN: -- to the fire.

DR. MAURO: Yes.

MS. MUNN: If that's what we're trying to do then we should say.

MR. GRIFFON: I think it's tied in with Kathy Demer's observation, too; those cases that she identified where --

MS. MUNN: Uh-huh.

MR. GRIFFON: -- a couple individuals I guess had no data in '69 so it was a combination of looking in the database and those -- those individual cases. I think that brought this -- that anomaly out more than -- I think -- I don't know.

MR. BUCHANAN: Yeah, that's correct. This is Ron. What brought this about was the question of people being in the fire and then they got zero dose recorded. And she -- she has some of that internal questions, dose questions and then when we were discussing it I looked at the external dose and seen that those two years just popped out of there on the regular flow of things. And yes, you're correct. In later years there are some much higher than this. But those two years kind of stood out by themselves in the midst of ten percent average. And so my question was is there a reasonable

explanation of this? Is it tied in with the internal dose missing data that some of the workers seems to think? I guess what I'm saying is some of the -- the interviews with the workers have problems with the reliability of the data and they point that they worked in the fire and then they didn't get any dose. And is that problem or is not a problem? I don't know but I just wanted to bring out this -- this question and see if there was a reasonable explanation for it.

DR. ULSH: So in terms of these two cases that Kathy identified, if we find a reasonable explanation for those -- we're not there yet; we don't know. But if we do find that then the fact that these -- we've got these two years with 36 percent zeros would not be quite as compelling in terms of data integrity issues; is that accurate?

MR. BUCHANAN: Well, if we didn't -- right, if we didn't have cases which were questionable during those years then this wouldn't be quite as much of a sore spot I don't think. Seeing that I guess we want to bring up the question, is there a data reliability integrity question

at this point on these -- these years.

DR. MAKHIJANI: You know, Brant, it might be very useful if we could know that, you know, that -- I also know that as Ms. Munn did, that the -- the percentage of zeros again goes up in the -- in 1977. Wasn't there sort of a change in the monitoring practices from '77? And so if you could have this badge exchange frequency, that type of issue that Hans has raised, there may be a clearer explanation or maybe a different explanation for the later zeros. The 1990's clearly though was production, so the high number would be explained by the fact that there's no production. But the '70's numbers are not so clear.

DR. ULSH: Well, I know that in -- okay, Jim Langsted, you might have to jump in here. But in '77 -- after '77 -- okay, from '77 forward, that's the years when they stopped doing the rollup; is that correct, Jim?

MR. LANGSTED: Yeah, the recordkeeping changed in about 1976 is when they implemented the -- well, they implemented a computerized data keeping that we -- that we have the records on.

But again that's quarterly data. There was not -- I don't believe there was a change in the dosimetry -- the dosimeter hardware at that point. It was a records keeping.

MR. ROBINSON: This is Al Robinson. I know that in the TBD it does say that from '77 on that all of the cycles that were read were reported and that's been the way we've handled it from '70 to '76 or prior to '77 we -- that there was only rollup data. However, from '77 on we assumed that -- that the cycles are there. And so that would -- could explain why you see so many more zeros in '77 on.

MR. BUCHANAN: Well, I understand from what I read that's the way I understand that it was done also.

DR. MAKHIJANI: Could a column of the number of badge exchanges be added to this? I guess we could -- we could because that would clarify it.

MR. BUCHANAN: Yeah. We don't really have that information --

MR. ROBINSON: We don't have that.

MR. BUCHANAN: -- for earlier before '76 and '77.

DR. ULSH: Jim, you're -- you're familiar with this 20 and the -- the databases that we have. Is that a -- an easy thing to do?

MR. LANGSTED: I'd have to look at that. I can't tell you -- tell you right now.

DR. ULSH: Okay.

DR. WADE: This is Lew. We're very pleased to have with us -- a petitioner has joined us. Would you, Tony, identify yourself?

MR. DEMAIORI: Yeah, I'm Tony DeMaiori. I'm the primary petitioner on behalf of the United Steelworkers.

DR. WADE: Welcome, Tony.

DR. ULSH: We -- We'll take a look, Arjun.

MR. GRIFFON: Yeah. So I don't think we can answer that right now but we're -- we're going to look into that. And NIOSH just received this so we don't expect an answer on the fly. Anything else in this document, Ron, that --

MR. BUCHANAN: Not -- Not SEC concern. I -- I think that those are the two main issues.

DR. MAKHIJANI: Can I ask Roger a question about the '52 to '57 period? Because I didn't know this one thing that you said that 10 to 20 people were monitored but they wouldn't be the

same people necessarily. So you have a certain number of badges but maybe you don't have complete dose records for any one person? And so you don't have a good neutron dose record for like a particular job? Or how can we know? Can we establish the representativeness of the work of -- of how these badges actually relate to individual workers? I looked at the NDRP report some time back so part -- part of my question, you already answered it but it's been a couple of months since I looked at it.

MR. FALK: Well, that was kind of before my time. I was in grade school and later in high school during that time. But -- But -- But looking at the records it seems like they chose the people as being the most likely ones to actually receive the highest neutron doses. And so that was the basis for essentially determining the 10 to 20 people who would be issued the neutron dosimeter during that month. And so it's probably not so much a cross-section representativeness as more of the bounding type of a situation.

DR. MAKHIJANI: Do we have any documentation for that or is it kind of --

MR. FALK: Nothing -- Nothing that says that explicitly but the rosters do change just a little bit from month to month. And that is certainly the way that other sites essentially did it also. When you only have a small number of the dosimeters to be issued, you want to issue them to the people who are at the highest risk during that month. That seems to be standard practice.

MR. GRIFFON: Hey, Ron, I wanted to go back to the -- the issue you just raised, ’52 to ’57, building 771 neutron photon ratios. And on matrix -- matrix item number 23. I don't know if you have that in front of you.

MR. BUCHANAN: Yeah.

MR. GRIFFON: We visited this issue before and the response I thought we got in a work group meeting and -- and in this matrix resolution column is that there were O-TIB 50 contained building specific and time specific ratios. Is that --

DR. ULSH: The NDRP.

MR. GRIFFON: The NDRP, I'm sorry. The NDRP. Did I say --

MS. MUNN: You said O-TIB.

MR. BUCHANAN: Yeah, and -- and -- and that's good. I need to go back -- what I'm saying is I need to go back and look at -- at those neutron entries in the neutron data for the workers to see how many was entered each year.

MR. GRIFFON: Right.

MR. BUCHANAN: And the range to see if it's appropriate to do co-worker models using that approach. And -- but yes, it's true they entered that and -- and, you know, like Roger was saying, they were -- there was monitoring each month or whatever period they chose at different buildings. Now, when we talk about only 18 being monitored, that was only building 771, and so I need to look at what buildings these were -- were monitored at, too, the NTP's were -- were used at.

MR. GRIFFON: Okay. I just wanted to relate -- I think it's related to that, matrix number 23, item number 23.

MR. BUCHANAN: Yeah, the NDRP does provide that overall information but it -- I don't have the -- I can't get to the individual data and that's what I'm requesting.

MR. GRIFFON: I got you. And is there anything

else? Have we hit on all the issues in the -- in the report you just handed out, Ron? Any other SEC issues?

MR. BUCHANAN: Yes, uh-huh.

MR. GRIFFON: Anything else on the general topic of neutron dose -- under the neutron dose reconstruction topic?

DR. WADE: Could I propose just a brief summary of what the SEC issues are in this document for Tony's purposes since he just joined us? Ron, could you again --

MR. GRIFFON: Yeah.

DR. WADE: -- just repeat your two questionable issues?

MR. GRIFFON: Just those two.

MR. BUCHANAN: Okay, yeah. For Tony's sake.

MR. GRIFFON: Yeah.

MR. BUCHANAN: This is Ron Buchanan and I've reviewed the neutron doses at Rocky Flats and just Friday I summarized our position on that and sent it to Joe Fitzgerald which handed out the sheets this morning. And not everybody has had a chance to digest this yet but essentially it goes down all the issues that we have raised, most of the major issues, and

determined which ones were SEC issues and which ones were not, and which would just be site profile issues. And the two site profile issues -- I mean the two SEC issues we have identified with the information we have available at this time are are -- there's two. Number one, we want to discuss why there was a abnormal -- a high number of zeros there in 1969 and 1970 in the -- in the data entries. Not abnormally high compared to later years but abnormally high for those two years compared to the five years adjacent to them. That was number one. There might be some explanation that they just put out. We wanted to discuss that. And number two was I needed to look at the detailed worker doses in the 1952 to 1957 time frame to determine if the co-worker model can be used for the workers to assign doses to those that weren't monitored for neutron doses in those early years. And so those are the two pending possible SEC issues that we have not resolved at this point.

DR. WADE: Thank you very much.

MR. BUCHANAN: Okay.

MR. GRIFFON: Okay. If there's nothing else on

the neutron topic I think we still have some time. I was going to break for lunch at 1:00 o'clock but I think we want to go into --

MR. FITZGERALD: I guess I would just add one thing. In the context of our discussion earlier we would also build on this in terms of trying to provide the working group a interim report. I mean you're seeing probably a lot of it here but assuming we get some answers to the questions, we'll build on that and provide that. We would plan to provide that certainly by the meeting, probably before the meeting.

MR. GRIFFON: That makes sense.

MR. FITZGERALD: Yeah.

OTHER RADIONUCLIDES

MR. GRIFFON: Then to move on to the next topic I have on my abbreviated agenda is other radionuclides. And primarily the one we've been discussing quite a bit from the matrix was americium, but I think there's a few others that SC&A wants to remind us that were on -- in the original matrix and we don't want to lose site of them so --

MR. FITZGERALD: Yeah, this was --

MR. GRIFFON: I'll turn it over to Joe.

MR. FITZGERALD: Yeah, this -- this was circulated about a week ago. It was a piece that Arjun summarized and we circulated to the Board and to NIOSH as a discussion piece almost. And you should all have a copy of it. I guess if you don't we can make copies but -- does everybody have that?

MS. MUNN: Uh-huh.

MR. FITZGERALD: Okay. Do you want to --

DR. MAKHIJANI: Yeah, I -- I looked at the evaluation report for what it said about the other radionuclide and also the TBD, to pick up that matrix item and try to see, you know, what the SEC-related pieces of it were so we could address it. NIOSH had said that for these other radionuclides the gross alpha -- I'm putting americium in there but I'll cover it separately. Generally the -- the -- the approach had been that the gross alpha urinalysis and the most conservative radionuclide could be chosen for that organ. And what I found and what is stated in part B of the memo, and I don't know whether I'm interpreting this properly, but gross alpha data are only available in what used to be

called plant B and plant D. But not for plant -- sorry. Not -- No. Yes. Not for plant C or plant A. And so I was -- it does seem that the other radionuclides as listed in the memorandum would work in the plants for which no gross alpha data appears to be available. I looked at americium in some more detail. There are two issues that have arisen in relation to americium which is how are we dealing with the -- the plutonium in vivo measurements in the plutonium streams where americium was depleted. Specifically the issue that we raised before was when you get aged, recycled uranium that's already depleted, the first time around has gone out and it's depleted in plutonium 241 and so it has very little americium when it comes back even though it's decayed. What happens when that is purified? And Roger Falk had given the answer that the production specifications were that a certain amount of plutonium 241 ratio had to be maintained and so that -- that issue would not arise. You would never get -- send out plutonium with very low plutonium 241 as a product out of Rocky Flats, so then you would not get something with very

low americium to start that in the return component. Now, that explanation on reflection seems to be a reasonable explanation. The only issue raised here is we've not evaluated this explanation, looked at the documents or reviewed it in any way. Theoretically it seems to be on the face of it a reasonable explanation. It seems like if we were to review it a classified investigation would be necessary obviously because you have to get into production specifications and so on so we haven't done it because the Board -- Board hasn't authorized it. So that's kind of an issue for the working group and the Board to deal with. The other americium issue which is more directly -- which is not a in principle settled issue as yet relates to the waste streams where americium was concentrated and the americium production itself that happened until the late 1970s. And there's a separate section in this little memorandum on that. There are some questions regarding the americium bioassay data which, well, there are several parts. Americium bioassay, first of all, began in 1963 so there's a gap between the

time that americium production was being done starting in ’57 -- ’58 -- anyway in the late ’50s and 1963. And then there are some questions about the interpretation of the bioassay data in relation to americium. Later on there -- there are -- there are five areas that are identified in the site profile where this issue would arise. We’ve delineated those five areas. For the in vivo counts there is the question of interpretation of in vivo data until more sensitive detectors were used which would be up until 1976. So there’s a question about whether we have adequate -- for sodium iodide and then (unintelligible) detectors were used. And Hans helped me out here because I don’t have -- you know, he has the field experience so I basically ran this by Hans as well as some comments that are there in the site profile itself because of the interference of thorium 234, especially for workers who are also working with uranium. So you have a problem of interpreting the -- the in vivo counts for americium. Now, whether some compensation of claimant favorable approach to interpreting the in vivo counts could be made

or not we didn't yet -- we did not evaluate that.

DR. NETON: Are you talking about the resolution of the sodium iodide versus the uranium system?

DR. MAKHIJANI: Yes, from the 63 TEB thorium 234 --

DR. NETON: You clearly have a 93 TEB peak for the thorium 234 which could easily be stripped out to measure the americium.

DR. MAKHIJANI: Yes, so --

DR. NETON: So it may not be a technical issue.

MR. DEMAIORI: I know we had a lot of expert (unintelligible).

DR. NETON: (Unintelligible).

DR. MAKHIJANI: Well -- Well, I -- I just want --

DR. NETON: Yeah.

DR. MAKHIJANI: It was raised in the -- in the TBD I think and also we thought at least we should put it on the table. I'm not saying that it's not an issue that can't be resolved or -- so basically it seems to me broadly that there are some measurement -- there's a gap in the americium monitoring up to 1963. There are

some measurement issues which could perhaps be easily resolved until 1976. And then there's the issue of how are we going to address -- how is NIOSH going to address the radionuclides in plants A and C for which it doesn't appear so far as I understand it the TBD to be gross alpha data.

DR. ULSH: I don't want to interrupt. Are you done?

DR. MAKHIJANI: No. And there are a number of, you know, the -- there's -- the radionuclides specifically are thorium 232, uranium 233, confounded, you know, with the presence of uranium 232 up to 50 PPM, neptunium, curium.

DR. ULSH: Okay. So if we can -- a couple of these we can maybe answer verbally but we'll prepare written responses.

DR. NETON: This -- This came over in a report what, last week maybe?

DR. ULSH: Yeah, last week, Thursday I think.

DR. MAKHIJANI: I just had it in my computer.

DR. ULSH: Regarding gross alpha, I think what we said about americium was that americium-specific bioassay started in 1963 but we were doing gross alpha before that from -- for the

gap that you're talking about from '57 up to '63, during that -- during those years there would be gross alpha measurements.

DR. MAKHIJANI: I don't think so because the way I interpret -- there's this table in that memorandum which is taken from the site profile on page 38. There are two -- two little tables there without numbers. But I just basically reproduced what -- what is there. And this seems to, if I'm interpreting the B1, B2, B3, C1, C2 correctly as belonging -- as methods that were used as belonging to the class with which those letters are associated, then it doesn't appear that if you look at the key, which is also from the site profile, then it doesn't appear that there are gross alpha data for the americium.

MR. FALK: This is Roger Falk.

DR. MAKHIJANI: Yeah.

MR. FALK: I would like to comment on the fact that the A, B, C, and D were just the general plant designations and -- and may be interpreted as being the default measurements for the bioassay for the -- for those buildings. But it does not preclude use of

basically any of the measurements for the special circumstances if the operational health physics staff thought that it was necessary.

DR. ULSH: So I think the point is it's too hard to do a delineation there. I mean those were the -- those were all the ones that were used based on the radionuclides that were in use in those buildings. But certainly I mean they could -- could have used anything that they found and for the special situation they could have used --

MR. GRIFFON: Well, then I guess the question isn't could they have. The question is did they? Did they do gross alpha during that time period. I think Arjun is raising the question is -- is -- you -- you gave a good answer previously, that gross alpha would have been used prior to americium specific, but the question is did they have gross alpha in those areas where americium would have been used during that time period. And I don't know that you can answer that, you know. Maybe that's something you can follow up on unless Roger knows offhand.

DR. ULSH: I don't know.

MR. GRIFFON: Yeah.

DR. ULSH: It seems logical that they would use the -- the technique that would be appropriate for the radionuclides that you could be exposed to. I mean I haven't seen any evidence that --

MR. GRIFFON: Or -- Or they could have. I mean we've certainly seen this at other places when the primary thing going on in a -- in an area is plutonium work and nobody's paying attention to the americium separation operation, you know. They may not be monitoring at all for that. So I don't -- I don't know either way but I guess if there's no gross alpha during that time period for people in those areas, then your previous methodology wouldn't hold. That's -- I guess that's what's being questioned anyway.

DR. MAKHIJANI: Yeah, well, I basically, you know, took -- took the suggested approach from the prior meeting and just reviewed the available documentation from NIOSH to see whether it would work. And there are some gaps. And it's not that the data might not be there but so far I could -- as I could see the literature there seemed to be some gaps.

DR. ULSH: Okay. We'll see -- We'll see what we can find.

MR. GRIFFON: Do we know, Arjun or -- or Brant, do you know if the other -- I mean you -- and understand me; this may not completely cut this way as Roger just said, but B and D have gross alpha. Do you know where these other radionuclides would have been used --

DR. MAKHIJANI: As far as americium I think --

MR. GRIFFON: -- as far as americium?

DR. MAKHIJANI: Well, you know, there are two people from Rocky Flats.

MR. GRIFFON: Right.

DR. MAKHIJANI: And maybe they should say whether -- it seemed to me that the 7-- 71-- 700-series buildings were where the americium work was done. Would that be right Bob, Roger?

MR. FALK: Yes, I am thinking that is the place where I know that it was done. I don't know that it was done other places.

DR. MAKHIJANI: And also, do we know where the thorium work, 232 work was done? My sense it may have been done with depleted uranium; that may have been done in plant A but I am -- I'm certainly not sure of this. Do we know?

DR. ULSH: I seem to recall having seen at some point a Chem-Risk report that kind of specified where the thorium work was done.

DR. MAKHIJANI: I quoted the Chem-Risk report here. Let me see. What did I say?

DR. BISTLINE: Roger, but wasn't that thorium 232 in -- done in late '83, mostly?

DR. MAKHIJANI: Oh, no. It did -- it was in the 700-series also.

DR. BISTLINE: Yeah, there was some in the 700.

DR. MAKHIJANI: I think it was both in the 800 and 700-series.

DR. BISTLINE: They both -- They both -- that was -- that was the issue.

DR. MAKHIJANI: Yeah. That's why it's in there.

MR. FALK: I'm thinking also it was used in the model shop, and I think that was in building 81, wasn't it, Bob?

DR. BISTLINE: Yes. Yeah, the model shop was in 81 but the preponderance of the actual work with it, most -- most of it was in 83 and then used -- used in plutonium production. Yeah.

DR. MAKHIJANI: The 800 would be what, A or D? No, D is in the 900, right? So the 800-series

is -- is plant A? Sorry?

MR. FALK: The 800 was -- was the B plant, like in boy.

DR. MAKHIJANI: You're right. That's right.

DR. ULSH: All right. The other issue that you brought up was when we were talking about the americium content from returns. Roger did give a verbal explanation for that but we also provided independent documentation for that. In fact I remember pretty clearly because it's one of those -- it's in one of our comment response sets and you -- you, Arjun, noticed that there was a blurb in there about (unintelligible) salt.

DR. MAKHIJANI: Oh, yes, you did send a document. I'm sorry. I forgot about that.

DR. ULSH: Yeah.

DR. MAKHIJANI: So I think -- I think that has been covered. So there is -- I have a document from you actually that specifies the percentages. I forgot about that. Sorry.

DR. ULSH: And obviously we -- we got this last week so we'll prepare responses.

MR. GRIFFON: Do we have any -- any impression on how many people would have been affected by

these other radionuclide exposures? Specifically americium, thorium, U233, curium, neptunium? Are they -- I just don't have a sense of how -- what the source -- the magnitude of the source (unintelligible) potential people involved.

DR. ULSH: I'm not saying that that information is not available but I don't have it in my head right now.

MR. GRIFFON: Right. Right.

DR. ULSH: Anyone on the phone have anything on that? But only speak if you know what you're saying is reliable.

DR. BEHLING: This is Hans. I do have a question regarding the MDA values for chest counting that are stated in I guess this is -- let's see here. This is in -- on page 69 of the TBD. I -- if it's the addendum or attachment and they have MDA values for americium in the years '64 through '68 that are in the order of 1, 2, 3 or so nanocuries. And I'm having a tough time getting to that kind of a number given the interference that you would get from K40 and potentially other nuclides that the person may have based on our comments

and -- and the discussions at the last working group meeting where we looked at the particular claim that I had raised up where the individual had supposedly ingested deer meat and the interference it caused, and the limited ability to see the -- the plutonium -- or no, the uranium 235. And I'm having a tough time looking at these numbers and -- and realizing that the 59.5 KeV photon wouldn't have similar problems in terms of detectability with a 4x4 sodium iodide crystal.

DR. NETON: Well, that was my -- that was my question, Hans. Was this referred to be a 4x4 sodium iodide detector that was used for urinalysis?

DR. BEHLING: Yes, this was the -- a Y-12 situation and in the early years they also used the 4x4 sodium iodide.

DR. NETON: Where? At Rocky?

DR. BEHLING: No, this was at Y-12.

DR. NETON: That's my point. I think that you wouldn't use a large volume detector like that when you're measuring 60 KeV. If you had a thinner sodium iodide detector the cross-section for the 1.46 MeV photons would be very

small and -- and have a much higher, you know, 100 percent efficiency for something below 100 KeV so --

DR. BEHLING: Yeah, I -- I -- I realize -- I realize that but I'm looking at the Rocky Flats TBD and there is a table. It doesn't have the numbers here but it is I guess an attachment that says summary of MDA for the in vivo lung counts at Rocky Flats. And for the 1964 through '68 time frame they give you two systems, one -- two values, one for minimum system and standard system; and they give it to you in units of nanocuries. And they range somewhere between one to four nanocuries as the MDA value for americium. And I'm having a tough time getting to that number or that level of sensitivity given the problems that we discussed in behalf of the Y-12 case.

DR. NETON: But that's my point, Hans. You need to compare what kind of detectors they were using.

DR. BEHLING: Well, in that case they used the 4x4, too.

MR. FALK: Hans, this is Roger Falk. If you'd look on page 56, it basically describes the 4x4

detector as being four inches in diameter and four millimeters thick. So we're talking about a mixture of the metric and the English system of units and we're talking about a very thin sodium iodide crystal.

DR. BEHLING: Okay. I -- I recognize the difference now. I'm looking at -- I just looked at the table and it said 4x4 and I had assumed it was 4x4 inches. You're correct. It's 4x4 millimeters, four inches by four millimeters. Okay. I stand corrected.

DR. ULSH: All right. Rocket scientists have had the same issue, mixing English and metrics.

MR. GRIFFON: Okay. Is there anything else left on the other radionuclide topic?

DR. MAKHIJANI: No, so basically you're going to get back to us on --

MR. GRIFFON: As far as the gross alpha.

DR. MAKHIJANI: Yeah, and the one -- the one depleted plutonium 241 is resolved.

MR. GRIFFON: Is resolved? Okay.

DR. ULSH: Okay.

DR. MAKHIJANI: That -- That one is resolved. The other ones we'll -- we'll get responses for.

DR. ULSH: I think you listed seven issues, Arjun? Yeah, seven issues there at the end. Which one is it that you're saying is --

DR. MAKHIJANI: The one that I noted was resolved by your comment just now was the -- let's see -- the second -- the second americium issue, plutonium depleted americium 241 which I think is C2, item 2 under section C. So if one -- the issue to if one accepts the NIOSH statements, et cetera. So that -- I forgot about the document you sent me.

MR. GRIFFON: And then make sure that -- I mean saw the other central issue as being can you use gross alpha for all these other radionuclides?

DR. MAKHIJANI: Is it there?

MR. GRIFFON: Or what -- Yeah.

DR. MAKHIJANI: Do you have the data?

MR. GRIFFON: Was it used? Yeah. And we understand that if -- when in doubt you're going to assume the worst case radionuclides but you have to have some data to do that and you're going to check that. And that covers all those other sub-sections; is that --

DR. MAKHIJANI: That's -- That's the --

That's the big issue, really.

MR. GRIFFON: Right. Okay. I don't want to -- I don't want to narrow it down from seven issues to two without thoroughly reading this.

DR. ULSH: Go ahead. It would make my life easier.

DR. MAKHIJANI: If you look at the uranium issue six on page seven it says, you know, the -- all about uranium 233 and the 700-series building and --

MR. GRIFFON: I guess -- I guess if I can consolidate, I mean what I want to understand is how are you going to reconstruct doses for those other radionuclides? And if it's gross alpha, you know, demonstrate where you have the gross alpha available for the time periods of interest and the other thing I just mentioned was the magnitude of these first items. Are they -- Are they big, you know? Is it -- Is it large quantities, small quantities? A great deal of people potentially exposed or very few people potentially exposed? You know, that will give us a sense, too, of how --

DR. ULSH: Well, we know for some of them -- for like neptunium springs to mind, and maybe

curium although don't hold me to that; they were in tracer quantities.

MR. GRIFFON: That's what I thought, right. Right.

DR. ULSH: But I'm not prepared on the other ones.

MR. GRIFFON: Right.

DR. BISTLINE: That gets into classified stuff, U233 and the curium tracers.

MR. GRIFFON: So to the extent you can outline that in -- in writing to us without getting into classified, you know, that would be helpful, too, so we can understand the problem in terms of the whole overall class, you know. Okay. Is that it? Is that it, Arjun?

DR. MAKHIJANI: Yeah, that's it. I mean there's the -- there's the data for the other radionuclides and the americium specific data interpretations but the americium there are two questions. There's the gap up to '63 and then there's the interpretation of measurements which may be less of an issue than is in the memo.

MR. GRIFFON: And I'm going to maybe get a few minutes before lunch. And I don't want to go

into data reliability with just a few minutes.

D&D WORK

But this question of D&D work, it's the last item on my agenda. And the question basically I think is how those nine proposed -- it's not outlined in the site profile, and I don't think it's addressed in the evaluation report. Maybe it is but it's covered in the class --

DR. ULSH: Right.

MR. GRIFFON: -- so I guess that's what we want to understand, how doses would be reconstructed for those workers.

DR. ULSH: Have you -- it's kind of a big topic. I know SC&A sent us over a list of the questions that they had.

MR. GRIFFON: Okay.

DR. ULSH: So do you want to go ahead and do that now or --

MR. GRIFFON: Or maybe -- Maybe it's -- Maybe it's too -- I mean we can break a little early I suppose. Some of us have to get on a call in between anyway so --

Can you -- can you -- can you give us a preview, Brant? Is there --

DR. ULSH: Sure.

MR. GRIFFON: Is there potentially going to be a supplement to the evaluation report or you don't think so at this point?

DR. ULSH: I don't think so at this point. We know that the external dosimetry systems that were used in the D&D era are the same as those that we used in the production era, Panasonic TLD. The big question that SC&A focused on -- and Joe, feel free to jump in and correct me -- was the use of BZ's, breathing zone monitors, lapel air samplers. So that would be the big issue I think that we'll want to talk about when we begin after lunch.

MR. GRIFFON: Right. Because every model we've -- we've so far seen is -- all -- everything is based on urinalysis data.

DR. ULSH: Right.

MR. GRIFFON: Now, we're in a different era where they did BZ.

MR. FITZGERALD: And the other issue is just the availability of records for what, you know, arguably are transient workers in the sense that the sub-contractors come and go. I think some question about whether the second and third tier sub-contractor, whether those

records were accessible, you know, that kind of thing.

DR. ULSH: And Gene Potter, are you still on the line? Okay, we'll try to --

MR. POTTER: Yes. Yes, I am on the call.

DR. ULSH: All right. We'll definitely have Gene on line for that discussion because he was employed at the site during that era.

MR. GRIFFON: Well, why don't -- then why don't we reconvene at -- can we do quarter of one or quarter of two? Quarter of two?

All right. We're -- We're going to break now and reconvene at quarter of two.

(Whereupon, a lunch recess was held from 12:50 p.m. to 2:00 p.m.)

DR. WADE: Board members on the -- the call: Mike are you there?

MR. GIBSON: Yes, I'm here.

DR. WADE: Are there any other Board members besides Mike, Mark and Wanda?

(No response)

DR. WADE: Okay.

MR. GRIFFON: All right. I think we'll go into -- well, do you want to do D&D or data reliability? It doesn't really matter which

order.

DR. ULSH: Gene, are you back? Are you on line?

MR. POTTER: Yes, I am. I found my mute button this time.

MR. GRIFFON: Then why don't -- why don't we discuss the D&D issue.

DR. ULSH: Yeah.

MR. GRIFFON: You can continue.

DR. ULSH: Joe, do you want to lead the discussion? Do you want to walk through your D&D questions or what do you want to do?

MR. FITZGERALD: Yeah, we can do that. I think a little -- little context or background. At the Advisory Board meeting the Board raised -- I think it was Mark raised the question of how D&D would be handled because thus far within the SEC class definition time period. And in the process of looking at that issue, since this was a new issue we felt the approach would be to come up with essentially questions to scope the issue and to raise what we thought were the perfect questions in terms of dose reconstructibility and to provide those to Brant and NIOSH as input. We understood that

there was an ongoing review of the question already underway so this was really something to complement that review. And that's about where it was left. I think this was going back a couple weeks ago. And there's a set of questions which I sent to the Board as well as to Brant and we have those sets of questions and we certainly can go through those. Again I -- I see these as really going in preliminary set of here's the kinds of questions looking at this really for the first time that I would raise as a, you know, first order set of issues and then go from there. I mean I think as we unfold this thing I guess there might be some other questions or issues or information needed but certainly this -- this is what struck us as the pertinent ones. I guess the first question, and again I guess everybody has a copy of this -- well, it's just really questions about, you know, we -- we understand that lapel sampling in fact was a -- a key screening technique. This is certainly a big change in terms of how monitoring was done from the production workers. And a lot of our questions on lapel samplers and when bioassays

would come into play really revolved around that. I think somebody even raised a question in -- in a public meeting as to, you know, how bioassays were in fact conducted. And the next question on DAC hour analysis, how that might have took precedence over who might normally get monitored. So our first question really was how were the individual workers selected to wear the samplers in the first place? You have a lot of these D&D workers coming in and out of operations all the time. It wasn't clear to us were they, you know, all sampled? Were they all wearing lapel samplers? Was it a -- this goes back to some of the original questions we had on who gets badged. Which ones would be selected to wear lapel samplers and what proportion of the total D&D population that one would expect to be on the site at Rocky Flats. Now, almost by definition after '93 almost everybody was associated with D&D so that -- our -- our -- our thinking, you know, how was that done and what does that tell us about the distribution. And procedurally, you know, the process as we understand it would be bioassays being conducted when in fact lapel sampling

results were elevated but we're not quite sure about that. That's -- That's a question mark in our minds.

DR. ULSH: The first thing I think we have to be clear about is that lapel samplers were used not in place of bioassay but in addition to bioassay. They still had a bioassay program in place and I'll rely on Gene to maybe fill in some of the -- texture some of the details here. But the lapel samplers were used in addition to bioassay samplings, a real time indicator. And I think, and Gene, I -- I'm stepping out on a limb here -- once you -- once you hit a certain number of DAC hours, might have been 20. I don't know. That's the number that sticks in my head. That was the trigger for a special -- for a bioassay but that was in addition to the routine bioassay program that was in place. Is that correct, Gene?

MR. POTTER: Yes. Most of the time the actual workplace indicator as documented was 40 DAC hours but you're correct; 20 was sometimes used by the building personnel to, you know, give them like a early warning level.

DR. ULSH: So the thing to -- to remember here

is that these BZ samples were used as a real time indicator.

MR. FITZGERALD: Now, did all the workers have BZ sampling done, all the D&D workers, or was it just the active hands-on D&D workers? How was that done?

DR. ULSH: I think the answer is no, not all workers were on BZ's, but Gene, do you have any insights on who would have been and who wouldn't?

MR. POTTER: That's not an easy question to answer because it was primarily based on the radiological engineering judgment with a couple of possible exceptions. Certainly in supplied air work for instance. Usually there was -- when we're talking the –- clean air suits of level B or bubble suits some people call them. The lapel -- lapel sampling was almost always done in those cases but other than that it was kind of a RAD-engineering judgment supplemented by some of the -- the guidance documents that we've documented there in this response.

MR. FITZGERALD: So the lapel sampling was a trigger for more frequent bioassay? If everybody was bioassay this was a screening

tool.

MR. POTTER: Right. Lapel sampling we did not, speaking from internal dosimetry's point of view, did not separate lapel sampling from any -- any air sampling. If you received an estimated 40 DAC hours by whatever, general air sampling, you know, job specific air sampling, whatever, if an estimated 40 DAC hours was received by the worker he was then subject to being sent to internal dosimetry. At the end of the program that had evolved to that 40 DAC hours had to be received over a relatively short period of time to figure pico bioassay and otherwise the -- the dose would be assigned from the DAC hours.

MR. GRIFFON: Was there -- I mean it seems to me it doesn't make a lot of sense that there was a routine bioassay program in place because the reason they put these -- these BZ programs in place was to avoid the cost of the bioassay programs.

MR. POTTER: Not in the case of Rocky Flats.

MR. GRIFFON: It wasn't the case?

MR. POTTER: No.

MR. GRIFFON: It wasn't scaled back at all or -

-

MR. POTTER: They had (unintelligible) account.

MR. DEMAIORI: We used lapel air samplers at Rocky Flats for contamination control, to control the amount of airborne contamination in the workplace. That was our primary use for lapel air sampling because we used a lot of pappers, a lot of full-face, different protection factors, and so that's how we knew that the contamination levels were building up too high and we were starting to get overexposed. Primarily that was the use of the lapel sampler.

MR. GRIFFON: But did you -- the question is did you stay on bioassay programs throughout? Did they still do urine sampling throughout?

MR. DEMAIORI: Yeah, we did routine --

MR. GRIFFON: Yeah.

MR. DEMAIORI: Yeah, we did routine bioassay all the way through the D&D.

MR. FITZGERALD: I guess -- I guess this question stands though. It doesn't, you know, there's this question of how sampling at 40 DAC hours being some kind of a trigger or stream for more frequent bioassay. I guess I don't

understand.

DR. ULSH: I think -- I think what happened there -- is this --

MR. POTTER: I would not term -- this is Gene Potter again. I would not term it as more frequent but special bioassay.

DR. NETON: Well, I was thinking, is this after 1989? Is this the time frame that we're speaking of? Because after (unintelligible) in 1989 there was a sort of requirement that you had to monitor everyone who had the potential to receive 100 millirem exposure internally. And it was well known at the time that bioassay samples were not adequate to demonstrate compliance with that requirement so I think a lot sites went to supplemental sampling with BZ's to -- to help shore up their program so to speak when they had what they would call a technology shortfall.

DR. ULSH: Al? Al Robinson, are you on?

MR. GRIFFON: Some cut their bioassay.

DR. ULSH: Well, I think that another point to make is that in all of the Rocky Flats dose reconstructions we're going to be relying on the urinalysis data. We're not going to be

assigning internal dose based on BZ results. So that's the important thing to keep in mind.

MR. GRIFFON: Yeah, I think that is important. I wasn't clear that -- that they had adequate bioassay going forward for D&D workers. So that's one -- one of the primary questions in my mind anyway.

DR. ULSH: Yeah. Yeah.

MR. FITZGERALD: Yeah. The second issue I think we did touch on. This is DAC hours analysis. There was a reliance on DAC hour analysis but it didn't substitute for bioassay. I guess that would be the answer for the question of reliance on DAC hour analysis. This -- This is a issue as part of this number two, December 1st, '93, Defense Board report noted sensitivity of this -- of the Selected Alpha Air Monitors -- SAAMs -- were only 42 DAC hours, averaged over eight hours. That probably didn't match up with the RAD Control Manual. I guess the question of whether the air sampling sensitivity was as sufficient to, actually do this kind of monitoring.

DR. ULSH: Gene, I'm going to hand that one off to you if you're --

MR. POTTER: Okay. I guess one of the -- the important points that we need to make here is that we never relied on strictly one workplace indicator to trigger special bioassay. And so even if the SAAMs were not as accurate or any -- as sensitive as one would like, you still had personal contamination nasal swipes and a host of other things that would -- would normally be telling. And then eventually CAMs replaced SAAMs when the heavy D&D started and the CAMs, of course, were very sensitive.

MR. FITZGERALD: Well, I think what clarifies this for me again is that these were all collectively techniques to trigger special bioassays as opposed to routine. And I think that answers some of the concerns we had, not distinguishing between the two.

MR. POTTER: That's correct. And we -- remember we -- we had regulatory. We -- We were going after 100 millirem intakes or less.

MR. GIBSON: This is Mike Gibson. Could I ask who is the DOE contractor for the Rocky site at that time?

MR. POTTER: Starting in ’89 for the infamous raid it was Rockwell, replaced by EG&G until

’95, mid-’95 Jack Kaiser Hill Company came in.

MR. GIBSON: Okay. Thank you

MR. GRIFFON: I just -- the database, the HIS 20, as I’ve been corrected on, the database records I think everything we’ve got so far goes up to ’88; is that right? Or do we have later years? I’m just asking because I don't know.

DR. ULSH: Are you thinking of the co-worker data because for that we used CEDR for internal and that went up through ’89.

MR. GRIFFON: It went up through ’89? We don’t -- we don’t have any of these, I mean in -- in aggregate, in database sense, we don’t have ’89 through -- which would cover the D&D period, do we?

DR. ULSH: We’re currently working on expanding the internal co-worker data in response to, you know, the D&D questions. The external co-worker data does go up through 2005 I think. The internal does not. It goes up to ’89 and we’re currently working right now on expanding it from the D&D era. And that will be based on HIS 20 data, not -- not CEDR, for the later years.

DR. MAKHIJANI: But Brant, when you include the data from the ‘90s in the co-workers do you -- do you -- how -- are you making a separate co-worker model? How do you integrate that? I mean it seems like completely different kind of work. Wouldn’t that data be an overall co-worker model or how consistent with the job type --

DR. ULSH: It’s a year by year analysis just like the previous idea but we’ll be using -- oh, sorry -- previous co-worker data, but we’re going to be using data from HIS 20 so we’ll be using for the radionuclides: uranium, plutonium, americium; we’ll be using the data for those years from HIS 20. So it will reflect the D&D -- results from the D&D era.

MR. GRIFFON: So it depends on -- on year works, not job or department?

DR. ULSH: Exactly.

MR. GRIFFON: Like the other.

DR. ULSH: Just like the other.

DR. MAKHIJANI: Okay. So you feel the missed dose with the co-worker data (unintelligible)?

MR. GRIFFON: Or the 50th or the 95th --

DR. ULSH: Yeah.

MR. GRIFFON: -- percent.
DR. MAKHIJANI: Percent.
DR. ULSH: Now, wait a minute. Not missed dose. Unmonitored dose.
DR. MAKHIJANI: Unmonitored.
MR. GRIFFON: Unmonitored.
DR. MAKHIJANI: I'm sorry.
MR. GRIFFON: Right.
DR. MAKHIJANI: I meant unmonitored.
MR. GRIFFON: On the -- just going back to the routine monitoring question, was -- was monitoring -- I mean was everyone at the site on a routine bioassay program during that D&D period or was it RWP specific or -- I'm just trying to get a sense.
DR. ULSH: I think the answer is no, Mark, not everyone was on routine bioassay. I think it was only people who were judged to have 100 millirem or greater potential.
MR. GRIFFON: Potential, right. Right.
DR. ULSH: Gene, do you have any more insights to fill in on that?
MR. POTTER: Yes. We implemented the 100 millirem per year from all intakes requirement by essentially bioassaying or putting everyone

in a routine bioassay program if they were RAD-worker II trained or RCT trained. So in other words, that's the minimum level of training required to work in a contamination area.

MR. FITZGERALD: Now, would that training be specific to, you know, Kaiser-Hill, or would that flow down to all the subs?

MR. POTTER: It was all the subs.

MR. FITZGERALD: So all the subs who were doing their own training, that would be covered?

MR. POTTER: Right. And most of them used the site training. I think there were probably a few exceptions but -- where they had shown equivalent training.

MR. GRIFFON: And they'd all --

MR. POTTER: And this RAD-worker II training is -- is a DOE-wide program and uses DOE-wide standards.

MR. GRIFFON: And they'd all be picked up on the -- on the overall site bioassay program though, right? The subs and everyone, yeah.

MR. POTTER: Yeah.

MR. GRIFFON: And they'd all be in the same database system?

MR. POTTER: Yes.

MR. GIBSON: This is Mike Gibson again. On the routine bioassay sample that took place after you implemented the -- the BZ breathers and then the SAAMs and everything else, what was the definition of routine bioassay? Is that monthly? Is that yearly? Is that quarterly? What was the -- What was the practice there?

MR. POTTER: Okay. It was annual urine bioassay and lung counting as frequently as equipment and workload permitted. That varied probably between 18 and 24 months, most commonly --

MR. GIBSON: Sorry?

MR. POTTER: -- depending on how many rooms are up and -- and that sort of thing.

DR. ULSH: Could you repeat that, Gene? Between 18 and how many months?

MR. POTTER: Eighteen to 24 months I would say was -- would be the -- the average lung count frequency. And since these folks were being bioassayed based on training, it’s a little difficult to audit that because people would sometimes let their training expire and so forth. And then they would be picked up on the program again once their training was current.

And then I should mention one more thing. Towards the very end, and I'd have to think or look up when exactly this took place, but towards the end we also required for lung counting I believe or that the person had made an entry into ACA within the last (inaudible) months.

MR. GIBSON: And as far --

MR. POTTER: There were some other wrinkles that were thrown in. Basically they were trying to reduce some costs.

MR. GIBSON: Excuse me if this has already -- this is Mike Gibson again. Excuse me if this has already been covered but on a particular project how many of the workers in the room or in the area, general area wore the BZ monitor? Was that 100 percent or 50 percent or 25 percent?

MR. POTTER: This is Gene again. I don't think that we have that data again. That was kind of a RAD engineering decision, professional judgment type thing. Again, all of them would have been on a routine monitoring program for urine bioassay and lung counting. That was -- and that was a yearly bioassay. Yearly urine

sampling generally if they made entries and lung counting at 12 to 24 months, somewhere in there.

DR. ULSH: Now, Gene, is it possible that they would have been on more frequent schedules than that? I mean is that the minimum schedule?

MR. POTTER: The special bioassays were taken any time there was an -- a incident so people -- yes, people were on occasion sampled more frequently than that.

DR. ULSH: But no one would have been on a routine say quarterly urine sample schedule?

MR. POTTER: No, there was, you know, RWP specific sampling generally for tritium and in some cases uranium where people received far more specific -- frequent samples but that was RWP based, not what we would consider routine.

MR. GIBSON: This is Mike Gibson again. Was this the historical practice at Rocky Flats for bioassay or was there a time when they were on say quarterly -- all RAD workers were on quarterly? And was it historical or was there a point in time that that changed? And if there was a point in time that it went from the BZ's to the annual bioassay about what time

period was that?

MR. POTTER: It -- I'm only speaking of the so-called D&D era.

MR. GIBSON: Correct.

MR. POTTER: And so during that period of time the program remained relatively constant with various tweaking here and there, you know, frequently to, you know, look at cost savings and so forth. So I mean --

MR. GIBSON: So technically -- this is Mike Gibson. Technically the D&D era ended when (unintelligible) one called an end to the Cold War. But if I understand any of Rocky's histories right, I believe the heavy-duty and get serious D&D work probably started in about the mid-90s, maybe -- maybe a little later in the 90s; is that correct?

MR. POTTER: Kaiser-Hill came in in 1995, mid-1995, and I would say it took them probably a year to really get going, something like '96 through of course 2005.

MR. GIBSON: Okay. Thank you.

MR. FITZGERALD: Did -- go ahead.

DR. MAKHIJANI: Gene, the -- the petition raises a question of the security guards who I

guess would not fall into the category you just mentioned of people who opted to have radiation training and therefore were on routine bioassay if I remember correctly. Right, Tony? What -- What -- What about -- What about the exposure assessment for workers like security guards or workers who were in the general area because of the, you know, large volume of dust when the buildings are coming down, contaminated things were being decommissioned and so on?

MR. POTTER: First of all, I don't agree that security guards were not RAD worker II trained.

DR. MAKHIJANI: Well, I -- I don't know. I mean I'm -- I'm just --

MR. POTTER: Yeah.

DR. MAKHIJANI: I'm just raising an example that was given in the petition.

MR. POTTER: Yeah, I would say that 99-plus percent of them were RAD worker trained, RAD worker II trained. And as a matter of fact far more people were RAD worker II trained than would have been required to be RAD worker II trained. Includes many administrative types because they might have to go into a building and would not necessarily want to be escorted

or -- or, you know, for whatever reason we -- this -- the concept of basing routine bioassay on RAD worker II training is a valid one; however, it's difficult to control how many people get that training. Some of them saw it as a red badge of courage, you know, employment security or something and so we had far more people in the routine bioassay program than the real heavy-duty D&D workers. But certainly it included all the heavy D&D workers.

MR. DEMAIORI: Wasn't there a DOE order that forced us to reduce the number of RAD worker II just like the beryllium? Didn't we make a conscientious effort to reduce those that were exposed and how many dosimeters we were issuing?

MR. POTTER: There could have been something like that. However, I never saw the effects at the -- at the operational level. It seemed like we always had far more people with the qualifications than who actually needed it, and far more people wearing dosimeters than actually needed them except for maybe on a very occasional basis.

MR. FITZGERALD: I guess I -- just going back

to your comment -- this is Joe Fitzgerald -- about who was badged, and the trigger was the RAD worker II training obviously. I came across a number of Defense Board -- Defense Nuclear Facility Safety Board reports in the early 90s, and this was a recurrent theme that they had in their reports about the fact that so-called visiting workers, workers that came on as sub-contractors and went off. They were concerned about their not being bioassayed because their training was being done elsewhere and their status was transient status. That -- That -- That, again I can provide copies of the Defense B reports but that seemed to be a concern in the early 90s. Going back to what you were saying before, is there any explanation for why that kept being surfaced and was there in fact some gaps as far as who got bioassayed by virtue of training?

MR. POTTER: First of all, let me -- let me agree that termination bioassay is always a problem and has been a historic problem at most sites that use a lot of subcontractors, and Rocky Flats certainly was no exception. And we didn’t really get a handle on that ‘til I would

say ’97/’98 when we were able to strengthen the contract language imposing fines for companies who did not run people through. Getting people into the bioassay program was never an issue in my estimation because most all the areas until the very end required dosimeters; it was very conservative posting levels for external dosimeters. And as people came in to get their external dosimeters if they were RAD worker II trained they were immediately sent over to internal dosimetry to in-process and they were placed in the bioassay program. Now, a lot of the subs, you know, had a policy that when the job was done they were going to lay the people off. They were going to give them no notice, and so this created the -- the possible termination problem. On the other hand, from day one those folks were subject to special bioassay if they were involved in any incidents. (Unintelligible) nasal swipes and all that sort of stuff, general air sampling. If there was any workplace trigger -- remember again, we’re going after 100 millirem or less CEDE so that was always in effect. And the fact that we, you know, missed some termination

bioassays, as most of the DOE complex would have during this time, does not have an overall effect I don't think on -- you know, there were no peak intakes likely to have been missed by that, just simply the fact that you did not get an exit urine sample.

MR. GRIFFON: But in terms of -- do you have a sense of how many individuals that might involve? It's probably a hard number to get a handle on.

MR. POTTER: Actually there are records of that, of -- of termination bioassay sampling. The statistics were very difficult to do as you can imagine. People switching companies, did they really leave or, you know, did they just switch companies and therefore, you know, they shouldn't count as a missed termination bioassay. But we did attempt to do that. That was required by DOE actually.

MR. GRIFFON: I guess I mean --

MR. POTTER: Those records -- Those records exist.

MR. GIBSON: This is Mike Gibson. If -- If people took a termination bioassay and the company ran the analysis on that sample, how

would they determine the date of intake?

MR. POTTER: The course involved for the sample was above the decision level. There would be no need to determine an intake date.

MR. GIBSON: Well, wouldn’t that determine the amount of dose the individual may have gotten depending on the date of it?

MR. POTTER: If the result was below decision level that was a non-detect.

MR. GIBSON: No, I'm sorry. Maybe I didn’t say that correctly. Maybe you didn’t hear me properly. If it was above the decision level how would you determine the date of intake, because that would specifically determine the amount of intake they could have gotten. If -- If they got the intake a week before you might have had a very high reading. That reading could still be high and they could have got the date of intake four years ago. How would you determine the date of intake?

MR. POTTER: Okay. So this is for specifically asking about termination bioassay?

MR. GIBSON: At this point, yes.

MR. POTTER: Okay. There were only a very few cases where the results were above the

detection limit that I can recall.

MR. GIBSON: Uh-huh.

MR. POTTER: And of course the first thing we would do would be to try and go after that individual for additional samples to verify, make sure that wasn't a false positive and such. But say that was borne out, and I can't give you any -- I don't recall any specific instances but -- because they were definitely rare -- but say that were to be borne out that that was in fact activity, and we would, you know, interview the individual. We would contact the RAD engineering folks in the locations where he worked. And if worse came to worse generally you would use the mid-point from between samples, going back to his last non-detect and assign a dose that way. Of course, all this has nothing to do with what the NIOSH process would be.

MR. GIBSON: Well, I think it does. I think the amount a dose the person got deter-- could determine the cause of -- probability of causation.

MR. POTTER: Right. But you're asking me how we would have assessed the dose.

DR. NETON: Right. Mike, we -- this is Jim Neton. We wouldn't necessarily use their dose assignment for our dose reconstruction program here.

MR. GIBSON: I understand that, Jim, but you would go back to the data and -- and try to re-determine a dose on your own.

DR. NETON: Right.

MR. GIBSON: But still, I'm just trying to ask what are the policies or the procedures, maybe I should be more familiar with them, on how one would determine when the dose of intake occurred because that would directly affect the amount of dose the person got.

MR. POTTER: Right. And my answer is if we could not determine an intake date by those -- interviewing individuals, the RAD engineering, looking at his health physics records, which is one thing I think I forgot to mention, see if he was involved in any incidents and so forth. If you could not determine a date any other way we would have assigned the dose using the midpoint.

MR. GIBSON: Okay. So if they were on a -- I'll just ask this question because I don't

know the exact answer and maybe you or Mark or someone else could help me. So if you went to the midpoint of their last bioassay sample and say it was nine months ago. Say they had -- they had had their annual three months before -- you know, nine months before they left. That still leaves a four and a half month window of opportunity on either side for the better or for the worse on what kind of dose they may have received; is that right?

MR. POTTER: That is correct.

MR. GIBSON: Thank you.

MR. GRIFFON: Let me just on the termination sampling I mean, I guess, and -- and, you know, Brant, you're looking to pull this data together from '89 on. But also I mean my sense would be if it's not a large population of termination sampling that's missed, I would think that your co-worker model could be used to apply this. The only thing I would say is if -- if you're missing a large number of these subs then I'd get concerned. From my experience that the subs did the dirtier work often so your -- your co-worker population could not be representative. You know, you

could have that issue. But if it's a small population that you're missing I would think this -- this could probably be resolved by applying your co-worker model even if you use the 95th or whatever. Am I --

DR. NETON: I think that's pretty much how we applied --

MR. GRIFFON: How you'd handle it, right.

MR. POTTER: This is Gene. Let me just observe that probably the dirtiest work was done -- in fact done by steelworkers.

MR. DEMAIORI: On the exit sampling, Gene, when -- exactly when did Kaiser-Hill no longer make that a requirement for exiting the site employment as far as bioassay and body counting?

MR. POTTER: Can you ask that again, please?

MR. DEMAIORI: Kaiser-Hill in the end no longer required exit surveys, bioassay or body count. When exactly did that come down?

MR. POTTER: That's what I thought you said. I'm not aware that that ever happened. We lung counted -- we did exit bioassays; we preferred to do them by lung counting just because if you've got a hit the individual is still at --

in your hands as you know the results right away rather than, you know, sending a urine sample off for 30 days and then trying to track the person down. So we preferred to do exit sampling by lung counting and at the end of course you only had urine available for the last few months when most everything was down anyway. And in some cases people wanted urine and so we always obliged them and did lung counting and urine.

MR. GIBSON: This is Mike Gibson. Just to answer your question, Tony. I don't know about Rocky but I know the same contractor ran Mound where I worked and the exit bioassay sampling physical lung count and everything else was optional.

MR. DEMAIORI: Absolutely. I knew the answer to his question because I left Rocky Flats after 26 years -- 27 years with -- with neither lung count or bioassay and Dr. Bob Bistline had been in more than one meeting with me when the contractor tried to remove the lung counter prematurely. And I had the DOE presence and we were assured that it would stay as long as possible but then in the end it was urine

samples and then after that it was, you know, absolutely nothing.

MR. POTTER: Let me make it clear that we -- to do exit urine sampling, of course you'd have to give somebody a urine kit and say, you know, please return this if they were leaving that day you had -- so you had no notice. So we always offered people at least while I was there the opportunity to refuse exit bioassay sampling rather than let them take a kit and just throw it away or something.

MR. GIBSON: Right. I -- I did not say that -- I did not say it was not offered but I was agreeing with Tony that at least the practice at Mound -- and I know we're not discussing Mound, we're discussing Rocky -- but there seems like a lot of similarities between the contractor. It was optional, not mandatory.

MR. POTTER: Right. I don't think there's any practical way to make it mandatory.

MR. FITZGERALD: Yeah, I got -- I got another question. I guess in terms of the last part of the EG&G tenure, and I'm talking about the early '90s, there were documented statements made by the Defense Board primarily since

that's the source of the reviews that we have that EG&G management indicated that the sponsoring companies of the subcontractors or visiting workers as they were calling them, would be responsible for bioassays. I guess that leads to my question of to what extent you have or did Kaiser have all the bioassay records centralized? Were these in fact -- were bioassays done elsewhere? Do records exist elsewhere? Do you have any sense of that?

MR. POTTER: Yeah, my sense is that this -- I'm not aware of any specific companies that did their own bioassay. And certainly by the end, you know, none of them are going to be DOELAP accredited. Very -- Very darn few of them would have been DOELAP accredited. But during the EG&G era I'm not -- I'm not aware of any companies doing their own, and if they did it would probably have been in addition to whatever Rocky Flats required.

MR. FITZGERALD: Yeah, I'm -- I'm just expressing concern that they apparently were expressing that the bioassays were being I guess given the responsibility of the other

companies. And I'll send you a documentation. I'm -- I'm just reflecting on what we were reading in terms of the Defense Board reports.

MR. POTTER: Yeah, that might have been a little wishful thinking on EG&G management's part.

MR. FITZGERALD: Well, it could be. Could be.

DR. ULSH: I haven't seen the language that you're talking about, Joe, but if you --

MR. FITZGERALD: Yeah, I'm going to -- I'll give you copies of the reports. These were health physics audit reports. The Defense Board did I think two or three annual reviews of Rocky and this was one of two or three major concerns that they kept raising which was this question of whether in fact all the workers were being bioassayed under the tutelage or, you know, oversight of in this case it was EG&G. And therefore, that, you know, it was a -- a surety that these were being done right and --

DR. ULSH: I'm just wondering if -- and I haven't seen the language. I don't know if this is the case or not but could it be interpreted that, you know, subcontractor A,

you're responsible to make sure that everyone is bioassayed? That's a little different. I mean in other words, you're going to be held responsible if your employees aren't bioassayed.

MR. FITZGERALD:: Yeah, I'm not -- I'm saying, you know, he's -- he's doing backup. That's a possible interpretation and we'll go ahead and give you the copies. I think at this point we can go ahead and give you the copies of the Defense Board reports. But this just gets to the question of what you're saying is as far as you know Kaiser and the operating contractor pretty much had their arms around all the bioassay records, pretty much knew who was getting bioassayed then.

MR. POTTER: Yes, that's my belief.

MR. DEMAIORI: I guess I'd like to say that, you know, I'm going over this in my mind but the steelworkers did the bulk of what you call the dirty work except for the exception of beryllium. The DOE order came down for us to reduce the number of beryllium workers. We had about 430 beryllium workers at the time so we reduced that number grossly to about 70. Then

the subcontractors came in and they kicked it up to 1,400. Now, I had a plant problems meeting with -- with the plant and the corporate attorney was present in this plant problems meeting, and I was questioning the DOE interpretation of reduction of beryllium workers because it was a job jurisdiction issue for me. I was losing work. I didn't have the qualified workers. So -- So it's not necessarily true that we did do all the dirty work because, you know, obviously because we added 1,400 new beryllium workers during the D&D phase, people who weren't previously exposed. And they were all subcontractors. Some -- Dr. Bob, you remember, some of them you'll remember some of them were wearing ankle bracelets so -- and we -- we brought in some pretty colorful folks in the end to do some of the work. So, you know, and I know it's not SEC --

MR. GRIFFON: These new beryllium workers, Tony, were they -- I mean I'm trying to imagine the situation where they'd only be cleaning up or dealing in beryllium. There must have been mixed exposures, right, or potential --

MR. DEMAIORI: They were doing strip-out, you know, ripping out lockers, ripping out, you know, strip-out.

MR. GRIFFON: So no RAD --

MR. DEMAIORI: Removing material.

MR. GRIFFON: No RAD work at all? Nothing in the RAD areas or --

MR. DEMAIORI: Well, we -- we played games with that. We had a three-party agreement that at 2,000 d per rem the work went to the steelworkers. And then our industrial relations office decided no, that only meant the steelworkers could be counted down below 2,000. Then it went back to the contractors. And then as we got into full swing it even got looser. So -- So there were a lot of subcontractors working in ACAs. That is to say that they weren't is not true because I've got hundreds of counts of grievances on this subject in particular about --

DR. BISTLINE: That was --

MR. DEMAIORI: -- jurisdiction.

DR. BISTLINE: -- uranium, Mark. A lot of it was that these guys were doing.

MR. DEMAIORI: Mostly 444. A lot were

electricians. Gas, electrical ran on us and stripped out half the building machines, everything. Everything they could get their hands on. Colorado Building trades, 865, you know. And I -- I have grievance after grievance after grievance. And that's why we went into the plant problems meeting because I didn't have the ability to supply the people due to the DOE order. We actually removed our people from the program.

MR. FITZGERALD: Just for the clarification, everybody who had potential of having 100 millirem or higher certainly was monitored, bioassay badged. Now, workers that the radiological engineer would estimate would not approach that, what was the -- were they unmonitored? Basically it was a judgment call not to monitor them?

MR. POTTER: Now, as I said, it was based on training. It had nothing to do with the RAD engineer's decision there. What I was talking about with regard to the RAD engineer's situation or decisions were things like lapel samplers.

MR. FITZGERALD: Lapel samplers?

MR. POTTER: Yeah.
MR. FITZGERALD: And so the decision to train was based on potential for 100 millirem?
MR. POTTER: I'm not sure what the decision to train was based on in all cases. Presumably it would be people who were required to work in a CA or higher but as I said, the site tended to overtrain in my opinion.
MR. GRIFFON: Even for these subcontractors such as Tony was just referencing?
MR. POTTER: I'm not familiar with the beryllium work but he is correct in other industrial hygiene situations as well. Asbestos work I think was primarily done by subs. RAD work I was talking about, and I was thinking of specifically, you know, not only the number of incidents which involve steelworkers which I was very familiar with but also this 2,000 DPM limit that once the steelworkers had gotten the building deconned (ph) down to that level, then it was turned over to construction trades or, you know, and say the case of 71, Mac Tech subcontracted to complete the work.
MR. FITZGERALD: You were -- You were

commenting on the fact that you thought too many folks were being trained but can you tell me how was that determination reached? I mean obviously that's -- that's the trigger for a lot of follow-on monitoring or what have you but -- and some decision was made on priority. You said perhaps workers that would need to be in controlled areas. Was that done by the -- basically the health physics staff looked at the work, proposed work, and determined who would be given RAD worker II?

MR. POTTER: I'm not sure that I can answer that question. Just make an observation that each company seemed to have an idea who they wanted trained and who they needed trained.

MR. FITZGERALD: Okay. So it was a company by company judgment based on the criteria?

DR. NETON: I think the requirement was that you needed RAD workers trained to have unescorted access to a contamination area, right?

MR. POTTER: Yeah.

DR. NETON: So -- So that -- that was the --

MR. FITZGERALD: It wasn't -- it wasn't even a dose based. It was --

DR. NETON: No, it was just unescorted access to the contamination area.

MR. GRIFFON: All linked to your surveying --

MR. FITZGERALD: Right, so --

MR. GRIFFON: So that -- therein lies the problem.

MR. FITZGERALD: Well, the area as far as we're --

MR. GRIFFON: Yeah.

DR. NETON: If the areas are posted properly that's the criteria.

MR. GRIFFON: Right. That's the key.

DR. NETON: But like you said, many people wanted unescorted access because it was a macho thing. I just want to be able to go walk around the plant myself.

MR. DEMAIORI: Well, one of the problems we were faced with with the 2,000 d per rem rule was that was removable. When we signed our three-party agreement we also included in an HCA under the DOE RAD-COM Manual direct contamination that was embedded into the concrete. That was 40,000 d per rem per centimeters squared. But then DOE revised the RAD-COM Manual and removed direct contamination

entirely so your subs like Gene Potter articulated, Mat Tech, whatever, they were removing direct contamination and going into HCA's. They were scabbling the floors, removing the concrete where the plutonium nitrate had penetrated. So they were creating HCA's from CA's. And so subcontractors were exposed to a large amount of airborne radioactivity. Absolutely. Make -- Make no mistake. Bartlett Nuclear Services --

DR. BISTLINE: Right.

MR. DEMAIORI: -- Mac Tech, some of the other subs who were doing that type of work.

MR. GRIFFON: I think the real test would be to look at the database, '89 to 2006 versus -- and I don't know if there's any record of which individuals were -- were or are going to be trained. Or -- Or if we could just get a sense, '89 to 2006, just look at that database and see how many workers were in the routine program versus how many were on site doing D&D. And if it's a high percentage then you could account for that --

DR. NETON: Yeah. Yeah.

MR. GRIFFON: -- that your co-worker model's

going to work.

DR. NETON: Exactly. I think the SEC issue --

MR. GRIFFON: Right.

DR. NETON: -- is resolved.

MR. GRIFFON: Right.

DR. NETON: Right.

MR. GRIFFON: So we need -- I think that'll answer another question.

MR. POTTER: This is Gene again. We investigated -- I mean everybody is making a point that there was some, you know, significant work going on and -- and there was significant potential for internal contamination, and that is -- that is true. And we investigated probably over 200 incidents a year and probably assigned dose in about half those cases. But outside of wounds, in the last ten years or so there were no really big intakes.

MR. GIBSON: Well, this is Mike Gibson. If I heard Mark correctly just a minute ago -- you were a little faint, Mark -- but when you mentioned --

MR. GRIFFON: Tired.

MR. GIBSON: -- comparing the databases I think

you said prior to ’89 and then from maybe ’89 after. And, you know, I would -- I would totally agree with that because if the RAD protection program significantly changed, whether the professionals deemed it to be correct or not, there could have been a lot more exposures shown than what there possibly could have been based on if they would have kept the RAD detection program the way it was back in the production days.

MR. GRIFFON: I think I know what you’re getting at, Mike. If -- If the frequency is lower in those later years, the way NIOSH -- if -- assuming that they have everybody or a large percentage of these people every year covered, it’s going to fall out because you’ll have -- the point you’re getting at is that the minimum detectable dose is going to be higher if you only have annual urinalysis as opposed to quarterly. And -- But that’s going to, you know -- that’s -- that might be -- make a situation where they’re assigning higher doses from the co-worker model. But my real question is -- is that -- is there or were there enough -- a high enough percentage and were the

highest potentially exposed people in this ’89 to 2006 data, you know, or 2005, whatever. And --

MR. GIBSON: Okay. My point --

MR. GRIFFON: -- co-worker model --

MR. GIBSON: My point, Mark, was if you went from a quarterly to an annual bioassay sample, there could have been, let’s say, exposures over the decision limit maybe -- although maybe not that high but chronic almost all year long. And then at your annual bioassay it may still come out above the DL and may not show, you know, a rem of exposure, 750 millirems, but they could have been getting that chronic all year long.

MR. GRIFFON: Right. And that’s --

DR. NETON: That’s exactly how we approach it for all the other sites that we do. We do a missed dose calculation based on exactly those type of parameters.

MR. GRIFFON: That’s what the co-worker model will assume is that it’s a chronic for that whole time period and given the MDA of that time period of a, you know -- so I think that would cover it, Mike, as long as the right

people are in the database to begin with.

MR. GIBSON: Okay.

MR. GRIFFON: As long as there's enough data there, yeah.

DR. ULSH: And we do know that with regard to that last question, Mark, were they trying to monitor the highest exposed people. I mean we know exactly what the criteria was for monitoring and that was anyone expected to get 100 millirem a year.

MR. GRIFFON: Well, they (unintelligible) anyone who had (unintelligible) -- I mean RAD worker II training.

DR. NETON: Well, anyone -- anyone who entered a contaminated --

MR. GRIFFON: They're kind of linked, you know.

DR. NETON: Well, anyone who entered a contamination area was monitored -- went into a monitored program.

MR. DEMAIORI: Yeah, the RWP would drive that. Well -- Well, the minimum requirements for entering into a CA. And so those are all, you know, matters of record.

MR. GRIFFON: I mean there's those two things going on. Jim's right. The technology

shortfall radionuclide was one thing -- one reason for the BZA's but also the -- the -- I think the -- there was a drive to -- to not, you know -- to at least limit the number of people on a routine program in some sites.

DR. NETON: But if you were RAD worker II trained you were on a routine sampling no matter whether you entered an RCA or not.

MR. GRIFFON: Right.

DR. NETON: That's what I'm hearing.

MR. GRIFFON: That's what I'm hearing, yeah, so --

DR. NETON: If that's true --

MR. GRIFFON: -- if we can determine that --

DR. NETON: Yeah.

MR. GRIFFON: -- and it's a large percentage, I think we're covered. Yeah. Yeah.

MR. FITZGERALD: Yeah. That's the trigger. So --

DR. MAURO: I've got a question and it goes back to the movie that we saw in Denver and the movie which I found very probable. The conversation we're having around the table right now sounds like a very controlled situation where people are identified of who's

going to be monitored, who's going to be where, who's going to do what. And -- but the movie I saw showed what I would say from the point of view of outdoors, the buildings coming down. What I saw was large structures being torn down, large numbers of people outdoors, large amounts of dust and plumes, airborne radioactivity moving out in an outdoor setting. And so the story we're talking about now sounds like a very well controlled health physics operation. But the movie I saw shows something that seems to be a bit different in terms of all of these folks -- and maybe you could help me out. All of outdoors, I'm imagining large numbers of people outdoors, working through the destruction work outdoors when the building came down. I'm not quite sure when those buildings actually were brought down. Was that at a point where all of the -- I guess the hot stuff or the hotter stuff has already been I guess carefully archeologically removed so to speak? And what came down was basically fundamentally clean? Or -- Or do we have a situation where we could have had circumstances where when the -- when that dust cloud puff

came up and moved out there might have been some workers out there who were never monitored, never part of the monitoring program, that could have been exposed to levels that were detectible or of some concern? I'd like to hear a little bit more about that.

DR. BISTLINE: Maybe I can speak to it some being I was program manager for the Department of Energy at the time. And all of the -- all -- all but the last couple of buildings of the -- of the plutonium buildings had to meet final -- a final survey criteria. And so the last couple of buildings that were brought down were basically hot. They were -- they were deconned down to as low as they could but -- where they could -- where they could get to the contamination but they did have contamination associated, but it was a very controlled condition where the -- where there was a lot of air monitoring going on with the state EPA and everybody looking over their shoulders. And -- And under controlled conditions and very slow takedown for the most part there with the equipment to track -- eliminate -- and using a lot of water with the spray and so forth.

DR. MAURO: In the movie we did see the spray but I have to say that I also did see notwithstanding the spray --

DR. BISTLINE: There was dust. There was dust from time to time.

DR. MAURO: And the continuous air monitors, you're saying, were strategically placed?

DR. BISTLINE: There were high vols (ph) and low vols.

DR. MAURO: High vols and low -- and that data -- that data are available?

DR. BISTLINE: Yeah.

MR. GRIFFON: So I guess my -- my point is, you know, we can hypothesize for the rest of the afternoon but if we have this data and we can compare how many people were monitored bioassay versus how many people were on site, that would give us at least a sense of what is -- is most of the population because they're not going to rely -- from what I hear you're not going to rely on air monitoring. You're going to rely on bioassay.

DR. ULSH: And that is true. We will rely on bioassay. But also keep in mind, John, the situation that you're describing with, you

know, a building coming down, maybe some amount of plume of contaminated dust, that's environmental dust. That's exactly -- I mean that would be registered on our environmental list. That would be assuming we're doing environmental measuring.

DR. NETON: Right. But you've got to remember if you've got a population of exposed workers like Mark's suggesting, if 50 percent of the people are all non-detectible who were monitored, they're presumably breathing the same air as the general people walking around if not higher. You've got a bounding situation there. I'm not saying we'd assign that but, you know, if we look at --

MR. GRIFFON: If we look on the other hand it turns out it's like ten percent then -- then you -- then I might have some more questions.

DR. NETON: Right. But then -- then it's a matter of what -- what dose do you assign as opposed to can you assign anything, in my mind.

MR. ELLIOTT: Were there any specific studies done during the takedown of the building to look at dust suppression technique and determine whether or not it was viable in that

set of circumstances? Because we have that as well.

DR. BISTLINE: The state health department was keeping a very close tab on that. They -- They were requiring sampling -- strategically located sampling at all times.

MR. ELLIOTT: And the dust suppression techniques, applying water being instrumental for this -- for asbestos but also for RAD.

DR. BISTLINE: No, no. Asbestos was pretty much cleaned up at the time. Right, it was RAD that they were concerned about.

MR. DEMAIORI: I'd like to point out that the buildings that did come down during '76 was the fire building with the high-fired oxides in particular with the false ceiling in that. And, you know, that surprised a lot of people because that was one of our most contaminated facilities. And so -- you know, and I read the reports, low risk for the population and work force and everybody bought off on it, you know. But -- But I will tell you that the great concern to my members just due to the nature of the building and the history and what was really still inside of it.

MR. GRIFFON: I think that's in our next course of action is to look at the bioassay data for those inventories and it can give us a general sense of how many workers per year were on site for D&D for that time period. I think that would be helpful to come down on assessment.

MR. FITZGERALD: No, I -- I think -- I think the question was proportioned bioassay that the -- I think the secondary issue is whether the -- I think that dust as an issue would be later. That might be something to look at. Right now I think that what we're hearing is that it sounds like everything was centralized. I'll send you the Defense Board reports but again that was the early period before Kaiser came on board so that was the last part. But that kind of again is a -- could be interpreted a number of different ways. I think --

MR. GRIFFON: And I'm not sure how minor of a job it is to get a sense for how many people were on site for each year either because with all these subs it might not be an easy number to get to. And I think it's a very important number, especially with some of the things that Tony's raised. You know, my concern would --

would also be if you, you know -- I've -- I've seen situations where CA's are defined and then just the situation you described, you know. You can say, okay, it looks -- it looks pretty reasonable here. We don't require it for this area. And then they start hammering into the cement floor. Well, nobody knows because nobody's looking for it but you've got contamination being spread. So we hope that's not the situation but, you know, I think that's something we want to be looking for so we need a pretty good sense of how many workers were on site.

MR. DEMAIORI: Absolutely. It's like when we found all the beryllium in the lockers in 444 locker room ten years later after we baselined that locker room. Okay, we did a complete sampling of the locker room and everything was down below limits once we discovered beryllium was a respiratory hazard. And then when we -- when we went into the D&D, the actual disassembly, we spread beryllium again because it was stuck in the cracks, you know, in -- in large quantities. I mean, Bob, you remember that.

MR. FITZGERALD: I guess one last question. You mentioned that other than rude intakes there wasn't anything that was major in the way of -- of I guess half-cell uptakes in the late '90s? Is that -- Is that a fair characterization?

MR. POTTER: Yes.

MR. FITZGERALD: Okay.

MR. GRIFFON: Short answer.

DR. BISTLINE: Hey, Gene, wasn't it about -- about the time Kaiser-Hill came in that -- that the on-site bioassay lab really kind of closed -- was closed down and you went to contracting? Or was it a little earlier than that?

MR. POTTER: Let me see. In '95 they had started to -- I -- let's see, '94/'95 they had already let some off-site bioassay contracts. And the on-site lab lasted until early '97 I believe.

DR. BISTLINE: Okay. That was kind of my recollection, too, and so all the bioassay was being routed through the on-site laboratory while it was in existence. I know that.

MR. GRIFFON: And after '97 you had -- you had subcontracted bioassay labs?

DR. BISTLINE: Yeah. But it was still going through the system.

MR. POTTER: Right. There was an analytical services group set up when Kaiser-Hill came in, and when the on-site lab closed there still was a site receiving station and a site database that handled the comings and goings of bioassay samples and the data packages.

MR. LITTLE: This is Craig Little. I want to hearken back a minute or two to the talk about termination bioassay. I found a form here that's dated 2005, Rocky Flats Radio Watch for (unintelligible) Processing Form. And I want to read you a pertinent part. Termination bioassay monitoring is required. When a current or former participant in the bioassay program terminates employment or concludes work involving the potential for internal exposure. I understand this requirement and either am exempt since I have never worked as a RAD worker, two, have not entered a CA, HCA or ARA since the date of my last bioassay. I acknowledge receipt of termination bioassay kits and sampler request kits. I realize that failure to submit the requested samples

constitute refusal on my part to participate in terminated bioassay program or have elected to waive the bioassay monitoring offered by internal survey. And it's signed by the outgoing employee, checked and signed by the outgoing employee.

MR. DEMAIORI: Just for the record, on December 31st when I was laid off, there was no bioassay program. There was no lung counting program in existence and I had to get special exception to get beryllium testing at National Jewish, just for the record.

MR. LITTLE: Not as of August -- as of August '05 it was.

MR. DEMAIORI: Okay, yeah. But December 31st, 2005, none of this was available to me or -- or my officer. So I just want to let you know that. And of course, I was the last guy to leave but --

DR. NETON: You turned the lights out, right?

MR. GRIFFON: Okay. Anything else on D&D? I think we want to move on to data reliability before it gets too late.

DR. ULSH: Do you want take a comfort break first?

MR. GRIFFON: Yeah, let's take a -- let's take five/ten minutes. I guess in ten minutes anyway, so ten minutes.

(Whereupon, a brief recess was held from 3:05 p.m. to 3:20 p.m.)

DR. WADE: Okay, let's get back to business. One last long pull.

DATA RELIABILITY

MR. GRIFFON: All right. We're on our last -- the good news, on our last agenda item. The bad news, it may be one of the lengthier ones although I think some of this stuff it's ongoing work so I'm not sure how long this will take. Data reliability, the topic. And maybe to start off, Brant, I -- I sort of in my mind anyway I've grouped this into two separate things. One is the data reliability issues where we've asked you to look at the hard copy records versus the electronic records. And -- And the other subset is the specific case issues which sort of led to all these -- the safety concern logs, the other logbooks, et cetera. So maybe we can start off with just summarizing the database question. And I think what's happened since the last meeting that

we've had is you -- you -- if I can -- I'm not sure I can do this justice but I think you -- you searched some of the claimants, some of the NIOSH claimants and you went into their hard copy records and you did a comparison versus external database -- external dosimetry records and internal?

DR. ULSH: I think that is correct.

MR. GRIFFON: And did you look at any other -- that was -- and then you had a breakdown of what might have been -- I guess my question, and I -- I've had a crack at this, but what was raw data records versus what was sort of HIS 20 printouts or -- or whatever?

DR. ULSH: Well, the thing that we were always comparing against is HIS 20, but the question is what were we comparing to HIS 20. And during the earlier years those raw records for lack of a better term would have been the what do you -- what do you call it, the beta gamma worksheets?

MR. LITTLE: Yeah. The, yeah, beta gamma worksheets. I can look at -- I can pull one up and look at it.

MR. GRIFFON: Yeah, beta gamma worksheets and

what -- what -- when you say early years, what years would that mean?

MR. LITTLE: ’66 to ’69 or ’65 to ’69.

DR. ULSH: Okay. After that we had some printouts -- was it health physics database or was it RHRS?

MR. LITTLE: RHRS.

DR. ULSH: It was RHRS which were I believe the dose of record at the time.

MR. GRIFFON: And they would do these printouts though, right? I mean earlier?

DR. ULSH: Yes, RHRS is the earlier database and those were the doses of record at the time. We compared those to HIS 20 as well for those later years.

MR. GRIFFON: And that would range from ’70 ‘til -- do you have any sense or --

MR. LITTLE: Well, I don’t -- maybe ’75 or ’76 it seems.

MR. GRIFFON: Okay. ’70 to ’75 or 6, something like that?

MR. LITTLE: In that ballpark, and I can -- I can check that.

MR. GRIFFON: Good enough. I just want to get a sense. And then what came next? The HDSL or

what?

DR. ULSH: Health Physics Database, right? HPDB?

MR. GRIFFON: HPDB.

DR. ULSH: Those acronyms. Is that the next database?

MR. LITTLE: Jim maybe --

DR. ULSH: Yeah, Jim Langsted, are you on the line?

MR. LANGSTED: Yes, I am.

DR. ULSH: Okay. So can you give us the breakdown in terms of what was the dose of record over the years? It started out up to maybe 1970 was the written records, right? And then after that came RHRS.

MR. LANGSTED: No, starting back at the beginning was written record up to about 1976. Then came the health physics database.

DR. ULSH: Oh, okay.

MR. LANGSTED: And then after that was the RHRS and then the HIS 20.

MR. FALK: Well, the health science was in there.

MR. LANGSTED: And Roger points out there was a health sciences database in there, too.

MR. GRIFFON: Ah, I thought I saw HSDS, something like that. All right. Thank you.
DR. ULSH: So there were a number of iterations of electronic databases that preceded HIS 20.
MR. GRIFFON: And you're -- you're carefully using the term the -- the dose of record?
DR. ULSH: Yeah, I mean --
MR. GRIFFON: I mean is there any -- we went through this with Y-12. Did -- Was there an acceptance from DOE that -- that database records would be the "dose of record" or --
DR. ULSH: Jim, do you have any answer to that?
MR. LANGSTED: I -- I personally do not recall any DOE buyoff on specifically what was the dose of record.
DR. ULSH: Okay. So I was being fast and loose with my term there, Mark. You raised I think this issue at the Denver Board meeting but for some of the later years when we were comparing one of the predecessors of HIS 20 to HIS 20 you -- you mentioned that you would like to see perhaps what preceded, you know the hard copy that -- that came before. And I think what we've done is that we've pulled some of the worksheets for the later years and we're in the

midst of comparing that to HIS 20 now in response to your concern.

MR. GRIFFON: That was my question really, was, you know, I wouldn't be surprised if you had a pretty good match between database printouts and the archived database. As a matter of fact I would hope it would pretty well be 100 percent.

DR. ULSH: Well, yeah. I mean, well --

MR. GRIFFON: It may not -- it may not be perfect either but --

DR. ULSH: Right. When you migrate from database to database that could be.

MR. GRIFFON: Right. Right.

DR. ULSH: So that would be about -- part of the way but --

MR. GRIFFON: More important would be to step back.

DR. ULSH: Right. Yeah. So I think we're doing that now. We've located some of these beta gamma sheets, TLD worksheets for some of the later years and we're in the midst of comparing that to HIS 20 now to address your concern.

MR. GRIFFON: And the same then on the bioassay

side of this I guess, the same kind of question.

MR. LITTLE: You've done some bioassay -- I'm trying to pull that up to refresh my memory.

DR. ULSH: And there we would have compared the cards, the bioassay cards in the earlier years up to what year?

MR. LITTLE: Well, I've got some -- I've got a mix up to '84. It may be higher than that from -- from -- I've got them as far back as '62 comes fine up to '89. Now, those -- there are no cards for '89, under HSDB compared to HIS 20.

MR. GRIFFON: Okay.

MR. LITTLE: But for the -- for up to like 1970 there would have been cards.

MR. GRIFFON: So in the claimants' files up to '70 or so, you'd have cards in there?

MR. LITTLE: Right.

MR. GRIFFON: And then after that it would be database, iterations of a different database. Okay. And are you doing any -- same question as before. Are you going back with that? Are you attempting to go back the same way as Brant just described for bioassay records as --

MR. LITTLE: Well, we really -- that's what we've really done essentially. We've done it for -- because the -- the -- the beta gamma worksheets only go up to 1970 and so we didn't go beyond that with those. And we haven't yet started looking at the -- we're just starting to look at the TLD worksheets.

MR. GRIFFON: Okay.

MR. LITTLE: It brings us into the more modern era on the external side. The internal side we've got the data that -- we've got cards up to 1970 and then HSDB to compare with HIS 20 after that.

DR. ULSH: But is there anything that precedes HSDB in like a written record that would have been prepared before it was entered into HSDB? I don't know the answer to that.

MR. LITTLE: I don't know the answer to that either.

DR. ULSH: Roger, are you on line?

MR. FALK: I am trying not to be.

MR. GRIFFON: That's an honest answer.

DR. ULSH: Do you know the status of whether or not there would have been any handwritten records or how late in time you might find

handwritten records?

MR. FALK: For -- For what?

DR. ULSH: For bioassay.

MR. LITTLE: Bioassay.

MR. FALK: Bioassay? There are probably urine log books but then those were actually directly entered into the health sciences database but there are -- there are probably those which are archived at the Federal Center.

DR. ULSH: So we're in the same logbook mode which you're going to talk about a little bit later.

MR. GRIFFON: Okay.

DR. ULSH: If there is anything that precedes the electronic data in a logbook.

MR. GRIFFON: And that leads me to my last question on this topic. It's in the site profile. I actually went back before this meeting and looked at the site profile again. It's always good to reflect back. And the second -- I think it's the second attachment or the first attachment in the internal dose section, and that's the bioassay one -- there's an in vivo and bioassay one. Somewhere in there, I even think it was in the

acknowledgement at the end where the author acknowledges certain people for -- for identifying or pulling logbooks, urine logbooks on which a lot of this analysis of the MDA to be conducted. And my sense earlier was that we didn't have logbooks. Now, maybe they were all gone to this Federal Center, you know. Maybe they're archived now or whatever but it seems like logbooks exist and that would be -- that's -- when we started this whole discussion we said if you have any urinalysis logbooks to compare raw records that would be the primary --

DR. ULSH: Roger, do you still have those logbooks in your possession or are they all at the --

MR. FALK: No, it turned out that I was able to find all but up to 1971. And those all have been returned back to the -- back to the Federal Center records storage system.

DR. ULSH: So, Mark, I think I can --

MR. GRIFFON: Well, it's just -- it's just -- prior to this I understood that they -- you had looked and weren't able to locate anything but now it seems that they -- they exist so --

DR. ULSH: Well, you might be confusing different kinds of logbooks. We've got the urinalysis logbooks that Roger's talking about. There's the foreman's logbooks. There's the contamination control logbooks.

MR. GRIFFON: Yeah, I don't -- I don't think I'm confusing logbooks but at any rate it's -- I didn't notice this in the site profile before either so this is the reference I'm going from now. I think it would be worthwhile to at least sample those logbooks if we can. Okay. So again, not, as Jim and -- Jim and I have been down this road before, you know.

DR. ULSH: Yeah.

MR. GRIFFON: We're certainly not looking for any kind of -- all of the logbooks but the --

MR. FALK: But now, those -- those -- those are not always logbooks. They are the data log. Normally I found them in sheets which were in labeled folders but they are -- are -- but they are the data logs.

DR. ULSH: So Roger, let me ask you. If we were to go back and pull some sheets or logbooks, you know, some representative samples across the years, and then could -- could pull

the results out of HIS 20 just to balance them against each other, how hard of a task would that be? I mean is that a manageable thing to do?

MR. FALK: Well, it -- it is -- it is difficult to find people specific because they are in the sequence of the -- of the sample number. They are not organized by person. But it's probably doable but it's going to take time.

DR. ULSH: So they don't have identifiers that would let you pull a result out of HIS 20; is that what you're saying?

MR. FALK: They will likely have the person's name and also the Rocky Flats employee number.

MR. LITTLE: They're going to be sequential or something and so finding --

DR. ULSH: Well, we can start with the -- the -- the worksheets or the logbooks --

DR. NETON: Yeah.

DR. ULSH: -- start there.

DR. NETON: Well, you're not really talking about finding -- finding claimants here. You're just talking about matching up.

DR. ULSH: Right.

MR. LITTLE: Right.

DR. NETON: Theoretically if it's in the logbook it should be in the database so you don't really have to identify --

DR. ULSH: We can put that down as an action item, Mark.

MR. GRIFFON: Anything else on the database question? I think that was something that I was probably (unintelligible). All right.

SAFETY CONCERNS

I'm going to move on to the other part of the data reliability question which is sort of this -- this path that we've gone down on the specific issues raised, some from the petition itself and some from SC&A. And maybe Joe has indicated, Brant, he'd like you to maybe start with an overview of where things stand and --

MR. FITZGERALD: Yeah, just from the last -- last conference call we had here in Cincinnati, what we want to do is simplify the -- the -- I wouldn't call it white paper but the report that we prepared before the Denver meeting which was about 18 pages of review on the issue to a briefer six or seven page just, you know, roadmap of what needed to be accomplished, and we did that. We circulated that. Brant took a

look at it and I think we're on the same page on that. And that's the piece that we're using for essentially the status of this thing and what closure would mean. And why don't you go ahead?

DR. ULSH: So this is the --

MR. FITZGERALD: Safety concerns.

DR. ULSH: Is that this one?

MR. FITZGERALD: That -- Right.

DR. ULSH: This is the official?

MR. FITZGERALD: No, that's the -- that's the status report from Kathy, basically. She can't be here; she can't be on the phone so that's kind of her status.

DR. ULSH: There were a couple of things in the May 19th, 2006 document that Joe sent over I guess it was last week. And like Joe said, it's a distillation of the previous document. And it boils down to there are a couple of things that SC&A is proposing that we look at. One is a group of specific safety concerns and I'm prepared to talk about those today. I should mention that the -- the copy of the safety concerns has been posted on the O-drive in the Rocky Flats folder in the usual place.

So you see on table 1 here from SC&A's document there are two, three, four, five -- seven -- seven specific safety concerns. I'm going to go through those briefly today because of the hour, and the full text of those safety concerns is at the O-drive. I also have hard copies here if anyone wants to pick one up. And then the second part is various logbooks, the second group of documents. We're not as far along on that. We've located the logbooks, some of them. We've looked at samples of them. Craig, do you want to characterize what we've seen so far?

MR. LITTLE: I looked at some. I can't say I did a comprehensive look at any single one but I pulled three or four or five contamination control logbooks and foreman's logbooks and looked at them. I think Kathy had concluded that the foreman's logbooks weren't of much value in terms of trying to describe incidents and things like that. Most of the information in those are things like so and so took a day off; his wife's going to have a baby or somebody has taken vacation. And I'm not saying that's exclusively the way it is but

there is that kind of information. It's more people movement kind of stuff. The contamination control logbooks range everything from the cafeteria read 20 DPM and that's all. There are a couple things like that on the page and that's essentially it to leaking -- leaking pipe or brought in supplies, monthly supplies or took swipes, things of that -- you know, contaminate control sorts of things. And very occasionally there are names in those logbooks where it would mention a worker by name. And we went into that with there was still five workers that -- I think they were five petitioners that Kathy had brought up by name and we actually went into one of the logbooks from the period of time suggested and tried to find this guy's name. And we didn't get through the entire logbook but we found his name one time and it had nothing to do with anything having to do with an exposure rate or anything of that nature. Not to say that there's not information available but it's going to be a needle in the haystack time trying to find anything that's applicable to somebody's dose or dosimetry and I -- I'm not

at all convinced that we're going to find any useful information, and I think the return on effort is going to be very small. Now, there is a collection of about 20 logbooks from the group that Kathy selected that have been put on CD and I think they were sent out to her way last week. And I have a copy of that also and I haven't even cracked the document yet. I just haven't had time to go through it. But we will be working. Now, the problem with all of these, of course, is that they're all facsimiles; that is PDF or handwritten documents so they're not searchable documents. And it would be as tedious as going through a logbook. Not quite as tedious as going through a logbook turning the pages but it's going to -- it's going to -- it'll be good insomniac type work.

MR. LANGSTED: This is Jim Langsted. I have looked through the first two of those 771 building radiation monitoring form and logbooks.

MR. LITTLE: Good.

MR. LANGSTED: And very similar to what Craig said, a lot of personnel or, you know,

radiation monitor vacation schedule, that sort of thing. Occasionally there's a mention that there was a leak and this particular glove box was cleaned up on night shift. But very seldom if any names and no quantitative data related to that.

MR. GRIFFON: And these logbooks you said they were sent out on CD. Can they be put on the O-drive?

MR. DEMAIORI: I've got a question. Did you pull the skin count logbooks out of the decon rooms?

MR. LITTLE: No, the only ones that I've looked at really are the ones that Kathy had requested, and I didn't look at all of those. There are --

MR. DEMAIORI: Because I believe there was --

MR. LITTLE: -- 22 boxes of those.

MR. DEMAIORI: Yeah, I believe that was part of the request was all the decon logbooks that would give you actual readings of skin contaminations and incidents of individuals. At Rocky Flats we had the three-wash rule, two-wash rule where -- where you can decontaminate in the decon room, you know, until the skin

turned red or until it was decontaminated, so that would provide a lot of additional information that -- that would never get to body count or bioassay sampling.

MR. FITZGERALD: Would those have individual names?

MR. DEMAIORI: Absolutely. Name, numbers, everything. When I removed glove box 134 east which was actually where the fire was in 777 everything we touched, pulled a screw off the wall, it would be 250/300 d per rem -- 1,000 d per rem. So my crew got skin cons every day because they refused to wear surgeon's gloves. Because prior to the RAD Con Manual in 1989 sheet metal workers were kind of hard-headed. They were supposed to be wearing gloves but every time you turned around a glove would rip and they'd still work. So we were in the decon room daily; so it would show the releases, things of that nature. The decon logbooks are a great source, and I believe that Kathy had asked for those also.

MR. FITZGERALD: Yeah, there's about ten of them listed here on the second page of attachment one.

MR. DEMAIORI: I wouldn't bite into the foreman's logs too much because that's exactly what it is is the management of personnel. So there's more in the contamination control logbooks which were negotiated to actually in the early '90s for -- for job classification. And there's a reason we negotiated them, because we were having a lot of unreported contamination incidents. So we actually negotiated it as a full-time job for the OCP's.

DR. ULSH: Okay. We'll -- We'll focus on those from the ones that you raise.

MR. LITTLE: Yeah, they're all still sitting there waiting to be scanned, yeah.

DR. ULSH: So we need to give those priority. Okay. The first set of documents that SC&A listed in their -- their write-up were safety concerns and I sent around a handout. We've looked at all the safety concerns listed in this table and I'd like to walk through and just kind of summarize what they turned out to be and our evaluation of them. Again, I have hard copies of the whole thing in a box right over here. Okay. The first one is 71-4 and the concern that was expressed was that an

employee was concerned that his film badge results for December 1970 did not show the high levels of neutron exposure which according to instrument readings and film badge results of other monitor on the same special job should have been expected. Okay. The resolution on this was the supervisor talked about the inherent limitations of neutron film dosimetry and also the plans to replace neutron films with TLD -- TLD's. If you recall, 1970 was right around the time of the transition from film badges to TLD's and the employee -- there's a checkbox on these forms, at least back in '71 and up into the '80s where the employee can check off whether he is or is not satisfied with the results of his discussion with the supervisor and he checked that he was satisfied. But this is one instance of an issue that seems to keep coming up. I mean we keep hearing this, that, you know, I worked on a job or I worked in a -- in a radiation area or a high radiation area and my badge came back low or zero. So I'd like to maybe just talk about this in a more generic sense. I'd like to paint a scenario for you just to kind of

give you a feel for this. If all of us were on a radiation job today, right now in this room, our job descriptions would all be the same. In other words, you know, so all of the job descriptions would be the same. We're sitting here at the table. For those of you who are dialing in, we're sitting at a long table, oh, I would guess 20-25 feet long. I'm terrible at estimating distances but let's say it's that. And so if you could imagine, I'm sitting at one end of the table and let's say that I'm a radioactive source. I'm in the middle of the room; I'm the radioactive source and I'm at one end of the table. So if you look at the dose rate that Craig Little is getting, he's sitting right here to my left about one foot away, whatever his dose rate is. And then I look down the table and I see -- I'll pick on one of my own people on that -- Larry Elliott. He's sitting at the far end of the table, maybe 20 feet away. Simply based on distance alone, Larry's dose rate would be if he's about 20 feet away a factor of 400 different from Craig Little's dose rate. So you certainly would not expect everyone in this room, same job

description working on the same job to have the same dose rate. That's just based on distance alone. That's not even taking into account the other factors that are important -- shielding. There happens to be not much between me and Larry except this table, but there could be a concrete wall, a toolbox holding the tools, who knows what. So there's also shielding to consider. There was a gentleman in here earlier that brought in supplies, that brought in soda. Focus that in. He worked in a radiation area if this room was a radiation area – in this scenario -- and then he left. So the time is important. Time, distance and shielding. This -- This is fundamental in calculating external dosimetry in health physics. So I think that employee -- sometimes workers think that, you know, all the results should be the same on a -- on a job and that's simply not accurate if you consider just the fact just in this limited scenario the difference in dose rates between someone who works close to the source versus someone who's far away. So I don't think that necessarily just the fact that not everyone on a job got

the same dose rate constitutes a data integrity issue. So that I think is our evaluation of the first safety concern. So I'll open it up for discussion if anyone wants to talk about that.

MR. DEMAIORI: Well, I -- I'd like to talk about the single source theory as far as sitting at the table with the hydrochlorination lines above me and not you and yet your dose rate is higher than mine. And so this is where these questions come in.

DR. ULSH: Right.

MR. DEMAIORI: Right. One of the individuals in the petition who did the physical loading of the stacker retriever in 371 with over 14 tons -- I'm not talking nanocuries -- we're talking tons of weapons-grade plutonium. That IO station is very small. You can only get two or three people in it. So what was articulated at the last meeting was well, the RAD tech was real wiley and he was hiding outside. No way. He had to be inside that small little room, the IO station that we called it, that gave him access to the glove box to put the plutonium in through the downdraft table. He had to be an

active member for contamination control purposes, not to let the contamination off the downdraft table and out of the glove box. Now, this person did the job for 120 days. We were rotating the crews who were physically putting the material in the glove box every five days and we were getting them to sign exceptions because as Mr. Potter pointed out we had -- we lowered our administrative limits so low by the time we got to D&D that we could no longer do production type activities. I mean at Rocky Flats we've always tried to be half of what the standards were. So -- So the data integrity question is how do you tell this RCT who's shoulder to shoulder with the people loading the plutonium that -- that his exposure is so much less? And granted there's technique. You try to use the person in front of you as a shield. Distance is your best friend, period. There's no doubt about that. But it's (unintelligible) to be that far off and then to be riddled with zeros and told that you didn't turn in your dosimeter. Okay. Working a hot job that's very monitored, okay, that is -- that -- that everybody's paying attention to.

I mean we're rotating crews so it's not routine. For that to be allowed, that's not possible. That's not possible. There'd have been disciplinary action if he didn't turn in his dosimeter on that type of a job. And yet there wasn't. There were zeros. Okay.

DR. ULSH: Certainly the analogy is -- I mean there's going to be situations where the source isn't localized to what, you know, to where my body is. It could be spread all around the room. There you would expect a different pattern. Or certainly there are situations like you described, Tony, where people are working side by side, maybe more shielding where you might expect something different. What I'm saying is in the generic sense, just based on the information that was in this safety concern, there's no detail here in this particular safety concern that would make me say there is no possible logical explanation for this. I mean certainly on some jobs you would expect exactly the result that -- that I described, that factors could vary by several orders. In fact dose rates that were experienced by different workers on that job

could vary by several orders of magnitude. There might be other situations like you described where you might not expect that. And also you -- you would expect that as people move around that might tend to even out dose rates a little bit. What I'm saying is you can't just in the generic sense look at the -- the people who worked on a particular job and expect necessarily that all those dose rates would be the same. And that was the issue that's brought up in this particular safety concern.

MR. GIBSON: Brant, this is Mike Gibson. And with no disrespect at all -- I mean this Board is supposed to be made up of scientists, doctors, and those that have been out in the labor field. And I -- I totally agree with you. There are some times that there are work crews that are in an area of you're tearing out a ballroom and it's -- there's going to be a magnitude of different doses. More times -- as many times as not you're going to send a crew as far as maintenance and decon, of an electrician, a pipe fitter, a mechanic and a decon worker and they're going to be going into

a room similar to probably the size that Tony was talking about and you're going to be working on a glove box that's maybe four foot by eight foot and you're all going to be right in there with your hands in the thing so, you know, I understand what you're saying and in some cases that's logical. And if -- if there was no details in this report maybe we should look further for further details. But there are certainly situations as many times as not where people worked shoulder to shoulder.

DR. ULSH: Absolutely I'll grant that, Mike.

MR. GRIFFON: Can you -- can you maybe -- I didn't look at the safety evaluation report here but it says the supervisor noted the inherent limitations of neutron film dosimetry and plans to replace film dosimetry with TLD's. What exactly did he note there or what -- See, it almost seems like he's acknowledging that there might be some reason for the difference there.

DR. ULSH: The supervisor -- Okay. The -- The concern expressed by the employee I've already pretty much read verbatim.

MR. GRIFFON: Right.

DR. ULSH: The supervisor's answer was inherent inaccuracy of neutron film dosimetry is known by health physics. However it was the best system known. Recent research and development of TLD crystals for neutron dosimetry has proven much more accurate. Consequently process operators in 771 have been issued neutron TLD's since January 1, 1971. The remainder of 771 people and the plant will be issued neutron TLD systems as soon as possible. Thank you for you concern. Concerns often lead to agreements. I didn't find his response particularly informative to be honest with you. It's pretty generic. But all I can tell you is for this one particular safety concern -- usually there's a package. There's this particular form and some other documentation behind it. But for this particular one this is all that we were able to locate on this.

MR. GRIFFON: And this doesn't tell you whether other employees were involved when he says others?

DR. ULSH: It does not.

MR. GRIFFON: It doesn't so you couldn't crosswalk any of this.

DR. ULSH: No, it doesn't tell us.
MR. DEMAIORI: Well, I'd like to point out that -- that the employee's saying I'm satisfied with your answer. It is no more than that. Please try to read no more into that.
DR. ULSH: No, absolutely not.
MR. DEMAIORI: The employer has said, hey, look, this is the system we got. We got a better one coming. Hey, I mean how much are you going to beat the dog so to speak, okay?
DR. ULSH: If it were me I might not have checked it if that was the only thing that I'd gotten. But I'm -- I'm just speaking in a -- in a general sense here. This is all we've got for this particular safety concern. Do you want to move on to the next one?
MR. GRIFFON: Yeah, might as well.
DR. ULSH: Okay. The next one is 86-13 -- 86-13. The concern expressed was that the worker was concerned about only receiving quarterly dosimetry badge results twice during 1985. Worker felt that the only reason for this was that they, the health physics staff, were short of help. In terms of the formal resolution for this, the matter was referred to the Joint

Company/Union Safety Committee. Well, I talked to Tony over the break just to get a feel for what -- what the process was here. And Tony told me about some of the improvements that he made when he took over in around 2000 but back in 1986 as I understand it -- and Tony, please jump in and elaborate if I don't get it quite right -- the worker would file a concern and then if he checked on this particular form if he was not satisfied with the supervisor's response then the matter would -- would be referred to the Joint Company/Union Safety Committee. So for this particular safety concern the worker was not satisfied with the supervisor response so this was taken up by the -- the Joint Company/Union Safety Committee. And the resolution was that according to a -- a letter that was sent from the Committee to the worker -- this is some -- a quote from it. The badge was in fact picked up three of the four quarters in 1985. Since we're in open session I won't say the name. Mr. X explained that due to their manpower shortage they selected the lowest risk groups using historical data and bypassed the badge pickup for the third

quarter. The choice was this over running late on the badge readings for the highest risk groups, those needing badge readings every other week. The health physics was unwilling to compromise the safety of the latter group for the sake of the lower risk groups which historically could go to a semiannual reading without jeopardizing safety. In the quarterly group some of the figures given to us at the meeting were that only two or three of the whole group went over -- went over 500 millirem for 1985. Even those going over were just barely over. The plant objective currently is to keep everyone under 2,500 millirem. National standards allow for 5,000 millirem per year. So this appears to be a case where a badge exchange was -- was missed due to a shortage in health physics staff. And as a result the worker who was on quarterly badge exchange wore his badge for an extra quarter. Now, there's no indication here that the worker was in fact unmonitored; simply that he wore his badge for an extra quarter. So again our evaluation is that this is not necessarily a data integrity issue because he was in fact

monitored. Any discussion on that one?

MR. GRIFFON: I guess the -- the concern sort of agrees with the response, doesn't it? The worker felt the only reason for this was that there was a shortage of help.

DR. ULSH: Well, the worker --

MR. GRIFFON: And that's sort of confirmed.

DR. ULSH: That is confirmed, yes. That -- The reason that they skipped that badge exchange for the lower risk workers was that they were -- they had a manpower shortage. But I think that the worker was concerned about only receiving the quarterly dosimetry badge results twice during '85. You can make an assumption, and this is only an assumption, that the worker felt he might not have been monitored. And that does not appear to be the case. All right. Any other discussion?

MR. GRIFFON: Would you -- Do you -- You have this individual's name. Did you look at the database and look at the doses he received by any chance?

DR. ULSH: No. No.

MR. GRIFFON: Just out of curiosity.

DR. ULSH: Didn't do that, Mark, because the

evaluation that we performed indicated that, you know, this is the situation so even if we looked at it and the readings were zero we would assume (unintelligible) data integrity issue.

MR. GRIFFON: Right.

DR. ULSH: Okay. Next one was 87-206. This concern dealt with personnel -- “personnel not receiving current dosimetry badge readings, usually signed off by the employee”. In terms of the resolution of this, this one was also referred to the Joint Company/Union Safety Committee and the Committee sent a letter to the workers stating that this is a violation of the HSE Manual 18.03 and it is a DOE requirement. This should not have been allowed to happen and must be corrected immediately. Employees have a right per DOE to receive this information. I contacted -- the name is given here -- the manager of radiation safety who assured me that this would be corrected immediately and the Joint Company/Union Safety Committee now considers this concern closed. So what this appears to relate to is that the workers who were required to sign off on their

dosimetry results in fact didn't get a copy of the dosimetry results. So -- And that's certainly a -- that's certainly a concern, a valid concern and the resolution reflects that. Corrective action was initiated and there's no indication here that the workers were in fact unmonitored, only that their results weren't reported to them in a timely manner. So again we contend that this is not -- while it is certainly a valid concern it's not a data integrity issue in terms of the SEC. Okay. The next one, 89-037. The concern was that the employee stated that he did not receive a bioassay for an extended period of time and he did not have a dosimetry badge change for one year, approximately December of '87 to December of '88. And according to the immediate supervisor's response the lack of bioassay for the period in question appeared to be due to an oversight. And according to the Joint Company/Union Safety Committee Performance Assurance Verification Form, the individual was subsequently entered into a computer database which should automatically initiate a request for analysis. And a second Performance

Assurance Verification Form that was contained in this package stated that the employee had no problems getting bioassays subsequent to that corrective action. The immediate supervisor's response does indicate that the dosimetry badge was in fact changed for the first and second quarters of '88 and on January -- January 24th of '89. According to a letter from the Committee to the employee the corrective actions were taken including training employees on the appropriate frequency of urinalysis, dosimetry badge change, and they updated a -- one of the Rocky Flats policy manuals. So our evaluation of this. Depends on the specifics of this situation. But if -- if this situation arose during the conduct of a NIOSH dose reconstruction there's obviously a period here where the employee did not have a bioassay result and that might constitute a gap in his monitoring so we would have a couple of options. There are several strategies available. We could assign dose based on co-worker data. That would be one option. Again we're not talking about a specific co-worker. What we're talking about is a claimant

favorable percentile value from all of the monitored workers at the site. On the other hand, if -- if the employee had bioassay results prior to and following this gap period we may not even have to go to co-worker data. We could use his own data and then interpolate through the gap. This does appear to be a concern but it appears to be an isolated example -- an isolated failure to follow the established proceedings and there was corrective action. So we don't really view this --

MR. GRIFFON: This is interesting to me more on -- on -- in light of our last topic, the D&D topic.

DR. ULSH: Yeah.

MR. GRIFFON: The question of whether, you know, this person, this individual had a corrective action. But he might have been a very outspoken individual and -- and safety-conscious individual and say what's going on. And the squeaky wheel gets the grease. They fixed his problem but how many of those problems were out there. That's the bigger D&D question I think we want to consider. So this

-- this issue I think you're right. It -- It can certainly be handled in a DR if you had co-worker data and stuff or he -- he had later urinalysis, no problem. I think it might be interesting to reflect on your D&D, you know -- conclusions on your D&D work period data that you're going to bring us next meeting or soon.

DR. ULSH: Yeah. Keep in mind, too, Mark, this is -- this is from 1989 so it's before the D&D period.

MR. GRIFFON: It's -- yeah. It would -- It would have been after -- I'm guessing it would have been when they started instituting a longer -- maybe -- maybe it wouldn't.

DR. NETON: This would be before (unintelligible) 35 came in. Thirty-five was the end of '89.

MR. GRIFFON: End of '89? Yeah, it might have been just -- just before. You're right. Okay.

MR. DEMAIORI: Let me please explain the safety concern process out at Rocky Flats in reality. The subcontractors, Colorado building trades, had their own safety system, the (unintelligible) team they called themselves. In all the meetings I had attended, the

Colorado building trades had zero contribution on safety concerns. In the Monday meetings, Robert Carr (ph), the CEO, and all the vice-presidents, when they get to building trades, does building trades have any issues, it's none. All the issues were taken on through the steelworkers. Even if they had building trades issues, subcontractor issues, guard issues, they were all taken on through the steelworkers and mostly the -- the RCP's, the rat packs. So that was for fear of retaliation or reprisal. You have to remember that the subcontractors were there for a short period of time to do the work and if they squeaked they were removed. And removed by their own union because the building trades, the foreman on the jobs are union members, okay. So the safety concerns were brought up through the steelworkers on behalf of a whole lot of people. You just need to know how it really worked. They couldn't remove us because we were pretty strong. We were the home team if you will with the -- the prime contractor. And we had the advantage of the DOE 628's, the whistle-blowers, but the subs didn't. Make -- Make no bones about

that. And their -- their whole safety culture was totally different. It was -- it's unsafe not to bring a paycheck home and feed the family. So you really need to take that into consideration.

DR. MAURO: But they did have access to you, your organization. In other words, if they had a grievance and they had a problem as a lower tier subcontractor --

MR. DEMAIORI: Right.

DR. MAURO: -- did they have recourse or were they just victims of the situation?

MR. DEMAIORI: What they did is they went and they whispered into one of our guy's ears and then we took it up as our cause.

DR. MAURO: So you just took it as your cause.

MR. DEMAIORI: Right. Absolutely. You know, they'd say come -- go over there and look at this. You know, there's nothing I can do about it but this isn't -- and it would reflect in our process. So we took the brunt of, you know, the -- the whole thing. And we did it for years and that's why they call it a Joint Company/Union Safety concern. If you'll also look at the salaried people. Go to the

electronic database, and you'll have one salaried safety concern to 1,000 steelworker concerns because the salaried people were at will. Employment's at will. You got a problem, maybe you need to go. And that's more of a salaried mentality also. So a lot of salaried people left if they had problems. It's what you said, you're not sure if you'd sign that as acceptance. A lot of them just said see ya. And so, you know, you have to understand the steelworkers were, for the safety program, the voice for the whole facility.

DR. ULSH: It's not clear to me whether this particular individual, what category he would have fallen into, whether it was salaried or sub or steelworker. From what you're saying there was a good chance he was a steelworker.

MR. DEMAIORI: Yeah, probably 90-some percent.

DR. MAKHIJANI: Tony, how far did the building trades go back at Rocky Flats?

MR. DEMAIORI: They built Rocky Flats.

DR. MAKHIJANI: But during the operation were there building trades people and steelworkers people throughout?

MR. DEMAIORI: Yes. Yes. The building trades contractually had new construction. The steelworkers production and maintenance. And then in the end we split the D&D.

DR. MAKHIJANI: Okay.

MR. DEMAIORI: We had HCA's; they had CA's. So we kind of changed the direct.

DR. MAKHIJANI: The kind of informal arrangement that you've described, so it went back all the way to the beginning?

MR. DEMAIORI: Absolutely. There's jurisdictional lines from the '50s. Colorado building trades, like I said, built Rocky Flats. They -- you know, we were talking about Eddie Pride, Charlie Pride, the singer's brother. He was an electrician at Rocky Flats, Colorado building trades, until the end and then he came over to the steelworkers. But he worked there 20 years with the building trades.

MR. GIBSON: Brant, this is Mike Gibson. And I'm not trying to be argumentative and I'm not trying to throw wrenches into this thing. I -- I think you guys -- I think NIOSH is doing the best they can with a terrible, sloppy record system the DOE had. And so I guess my concern

on this issue is if this claim is legitimate, in other words, missed time that this gentleman or lady was monitored and there could have been missed dose, if you guys have to rely on co-worker data I fall back to your original example of you guys sitting in this meeting room. And Larry may have 400 times less exposure than the person sitting next to you. So that's just to me as a Board member, and I'm just trying to express my opinion, that's where I feel somewhat -- and I'm not saying you guys are not doing a good job and I know you're trying. But that's why I'm uncomfortable with -- sometimes with co-worker data.

DR. ULSH: Yeah, I understand your concern, Mike, and you're not the first to have expressed that. I know that the petitioners, and we've heard it in -- in some worker comments are concerned about that, too. And I think the thing that you have to keep in mind, Mike, is that we don't rely on co-worker data from a particular individual for exactly that reason. Instead we rely on the entire monitored population and take the highest -- okay, let me rephrase that. We take -- in some

cases we take 95 -- 95th percentile of everyone who is monitored at the site in -- in situations where we think there was a potential for significant radiation exposure for exactly those reasons.

MR. GIBSON: Right. And -- And I understand that and I, you know -- I -- again, I think you guys are trying to do a good job. I'm not saying you're not. That -- And that's probably -- that is probably claimant favorable. And, you know, I -- I don't want to see anyone compensated that doesn't deserve it, but I certainly don't want to see anyone that deserves compensation be denied based on the system. And, you know, so I just -- again, I'm not trying to be argumentative but I -- I guess that's why I just try to -- I look into the weeds on things.

DR. ULSH: I understand. I agree with you completely, Mike. I mean it's much more important that someone who deserves compensation is not denied unfairly. That's our primary concern. That -- That -- The practical implication of that is that some people who -- I don't want to say don't deserve

it but --

MR. GIBSON: Well, right. Right.

DR. ULSH: There were more people paid than -- than --

MR. GIBSON: I think -- I think we know what we mean but I just -- I don't want to see anyone that deserves it not get it. I mean, you know, $100,000 is nothing for a life, for going through cancer but that's just why -- I guess that's why I push issues sometimes is, you know, I want to try to make sure. And I know you guys are doing the same but I just wanted to raise the issue.

DR. ULSH: All right. Thanks. Move on to the next one, Mark?

MR. GRIFFON: Sure.

DR. ULSH: The next one is 89-214 and the concern that was expressed is that, and this is according -- the established procedures are not being followed -- and this is in quotes actually on the sheet -- "Personal and Confidential, Personnel Dosimetry records each quarter." And if you look at the supervisor response on this it indicates that it's not a safety issue and it goes on to state that any

employee with a similar concern will have their personal dosimetry record cut out from the master record and presented on an individual basis. And the employee indicated satisfaction with that result on the form. Now, as near as we can tell this appeared to be an issue that occurred not just at Rocky Flats but at some other sites. And that is that periodic dosimetry results were posted publicly on a master list. This -- This particular employee and certainly others were concerned about their personal information being posted in a public place. And that would certainly have privacy implications and this concern appears to be related to that. So therefore it doesn't appear that this is a data integrity issue. It's more of a Privacy Act issue.

MR. DEMAIORI: If you look at the data concern that was before HIPA, and that was back when I told you in the last working session that, you know, some supervisors used dose record as a determination of productivity during the Cold War. You know, you didn't work hard enough this week; look at your dose compared to your brothers.

DR. ULSH: So I can certainly see where employees would be concerned about their personal information being posted in a public place for everyone to read and that appears to be what this issue is about.

MR. DEMAIORI: He probably worried about being chastised over the amount of productivity.

DR. ULSH: That could very well be.

DR. MAURO: Was that a badge of honor then? When you were posted and you had a high dose was that a badge of honor?

MR. DEMAIORI: Yeah, if you thought that being a hard worker was, if that was your mindset, absolutely. You know, that's -- they had -- and like you said, three of us could be working the same job but you could be living under gloves and we could be practicing (unintelligible) you know, and bias the fact that you were the better worker even though you're living in the gloves. It doesn't mean you're productive. It just means you're -- you're taking the dose. Absolutely.

MR. GRIFFON: But not really an issue relevant to the, reconstructing dose.

DR. ULSH: The next one is 89-255. We've only

got two more to go including this one. The concern that was expressed with regard to lack of notification if a high accumulated dose equivalent trend had been set. This one was hard to interpret, hard to piece together what it was about. But according to the resolution, according to a memo from representatives of the Joint Company/Union Safety Committee to the employee it said that OHP has taken the position that they do have meetings with individual employees and their management if the target limits are exceeded. In addition, the individual employee exposure records are available upon request by that particular employee. No corrective actions were required by the Committee. Again in our evaluation, the meaning of this concern wasn’t entirely clear to me and I don't know, maybe Bob or Tony or someone who was at the site might have a little more insight on this. But -- But it seems to indicate that the worker was concerned that -- that they were not notified when their trends in dose would eventually put them over some target dose limits, maybe an administrative limit perhaps. If that interpretation is

correct it wouldn't necessarily constitute a data integrity issue although, you know, a worker would certainly be concerned about knowing that kind of thing. But it doesn't appear that it would prevent us from doing dose reconstruction if we've interpreted this correctly.

MR. DEMAIORI: In 1989 we were continuing to reduce our targeted dose rates at -- at the time, our administrative doses. And so any time a worker was about to exceed the administrative limits, the worker felt that they were in jeopardy. And that's why the safety concern would have been filed. We kept lowering the administrative limits to the point around 1989 where they were so low we couldn't work. And the company was getting bonus after bonus for lowering the limits. And then we started to go back to work after '89. You know, we had residues we were working on, packaging plutonium, and so we started to increase the limits and then the average worker felt that we were putting them in jeopardy because now we're increasing limits that we said we were lowering to protect them. So I

think this is where you'll see this. They're saying, hey, you knew this job was going to double and triple the administrative limits that we had set and now you're asking for variances; you're asking for exceptions; you're asking -- and I believe that that's where this comes from.

DR. ULSH: And like you said before, that could have implications for the worker in terms of being eligible for premium pay or overtime pay, that kind of thing, you know. So the worker, you know, might want to know about this.

MR. DEMAIORI: Well, I think on this one in particular the worker felt that if you lowered the limits then those are the limits you should stick with.

MR. GRIFFON: Stick with, right.

MR. DEMAIORI: Yeah, I think that's more --

MR. GRIFFON: -- changing it back to higher.

MR. DEMAIORI: Yeah. If you told me last year that you're lowering it to keep you safe, well, then this year you're not keeping me safe.

MR. GRIFFON: Right.

MR. DEMAIORI: I believe that's a part of it.

DR. ULSH: So again it's an important issue. I

mean there's no question about that. But --

MR. DEMAIORI: But it's productivity versus safety.

MR. GRIFFON: But it doesn't necessarily impair your ability.

DR. ULSH: Exactly.

MR. GRIFFON: Right.

DR. ULSH: Okay. The last one is 92-036. And the concern that the employee expressed was we have not received information from external dosimetry concerning readings from our TLD's for the past year. I have called on them -- I have called them on several occasions and have been told that they have computer problems. This is important safety data used to track employee exposure. And this sounds rather similar to one of the earlier safety concerns, that it has more to do with timely notification of the worker about their particular dosimetry results. And according to the supervisor response, external dosimetry had been contacted and they were going to provide the TLD data and, you know, they've recognized that that's an important issue. The employee indicated satisfaction with the results and a letter from

the Joint Company/Union Safety Committee to the employee said that the Committee has verified implementation of the safety concern and has closed it. Again, that appears to -- appears to be a lack of timely reporting dosimetry results to the employees. Now, there's no indication here that they were in fact unmonitored but just that the results weren't reported to them in a timely manner. So again we don't feel that (unintelligible) dose reconstruction. And that wraps up the safety concerns.

MR. FITZGERALD: Well, I think the only action incumbent upon us is to take a look at these evaluations. Does the O-drive file include the summary as well as the individual safety concern documentation?

DR. ULSH: Right now currently on the O-drive I've just placed the -– well, for instance here's an example, the individual safety concerns and my supporting documentation. As soon as I go home today I'll include this document. It's not on there right now.

MR. FITZGERALD: Kathy's on her way back to Washington, too.

DR. ULSH: Yeah, I think I might need to correct that, too. Karin just pointed out to me that on the -- the -- our evaluation of the last one, 92-026, the last -- very last sentence. I said as such, it does have data integrity or other SEC implications. I forgot the word not.

MR. GRIFFON: Does not. This could change the meaning there just a little bit.

DR. MAKHIJANI: Brant and Joe? Are these -- I -- I've lost actually the issue of your last -- I was focusing on Y-12 but are -- are these the issues derived from the affidavits that are in the petitions or is that a separate set?

MR. FITZGERALD: Well, I think the first one --

DR. MAKHIJANI: First one was?

MR. FITZGERALD: -- 71-4 I thought was one of those.

DR. MAKHIJANI: Yeah.

MR. FITZGERALD: It says may be an issue.

DR. MAKHIJANI: I recognized that one but I didn't recognize the others.

MR. FITZGERALD: Yeah, the same ones, 4 and 206. See the ones that have matrix issue numbers next to them?

DR. MAKHIJANI: Okay.

MR. FITZGERALD: Those are the ones that came from the affidavits. The other ones were ones that were identified by the description, the -- she picked the ones that had dosimetry or badge issues without getting deeply into all the -- the discussion and the resolution or anything like that. So I think what this demonstrates is a lot of these just didn't pan out to be specifically discrepancies or problems with data reliability per se. I think we need to look at this a little bit more.

DR. MAKHIJANI: So my question is where are we on -- on resolving the -- so that the number -- well, the number of complaints. You tried to address it generically and I -- I understand. But there are a number of complaints other than a high radiation area or the supervisors were reducing my dose to zero. Do we -- Do we now have a catalog of that that we're going to resolve? Or how are we going to address --

MR. FITZGERALD: Well, this -- this whole thing is --

DR. MAKHIJANI: -- address the -- the -- do we have a list of those that we're going to

address?

MS. JESSEN: Right now we're putting together a table that addresses all of those issues.

DR. MAKHIJANI: Oh, great.

MS. JESSEN: It's not quite complete yet.

DR. MAKHIJANI: Okay.

MS. JESSEN: But it will address -- currently we have 23 issues in this matrix right here, and we're addressing all of those issues that were brought up in the petition as well as the additional issues that Tony brought up to Brant.

DR. MAKHIJANI: Okay. Good.

MS. JESSEN: So that's currently under development.

DR. MAKHIJANI: So we'll go affidavit by -- wherever there are sort of substantive -- data fabrication, allegations, and those kinds of things and go through them one by one?

MS. JESSEN: In this matrix everything is addressed that was in the petition.

DR. MAKHIJANI: Great.

MS. JESSEN: That includes the affidavits. It also includes certain statements that were in the petition that are not affidavits.

DR. MAKHIJANI: Right. Right. I remember I tried to compile initially, you know, made a very rough cut at it. So I'm very glad that you've kind of taken it to the next step.

MS. JESSEN: It's not quite done yet.

DR. MAKHIJANI: I appreciate that.

MS. JESSEN: But we're working on it.

DR. ULSH: We've gone through the petition and we've pulled out -- there was -- where there were specific examples. Those are included in here and also --

MR. GRIFFON: That should overlap with the ones we have in this -- this matrix that we developed in the working group, right?

MS. JESSEN: Yes.

MR. GRIFFON: Because the back 20 or so were pulled from there.

MR. FITZGERALD: Does that include the one --

MR. GRIFFON: It might be more extensive.

MR. FITZGERALD: -- one or two that we -- I'm not going to mention any names -- that we culled out after the Denver meeting for special, you know, focus? One -- Let's see here.

DR. ULSH: We can talk about the -- what people

have said.

MR. FITZGERALD: It's hard to -- it's hard to block out names.

DR. ULSH: I know what you're talking about.

MR. FITZGERALD: Yeah.

DR. MAKHIJANI: One is -- One of those is pending and one of those is resolved.

MR. FITZGERALD: Right. But that's part of this -- this group of 22 I would assume.

DR. MAKHIJANI: I think so.

DR. ULSH: Okay. Talk about the stuff that people have talked about in a public setting we can talk about --

MR. FITZGERALD: Right.

DR. ULSH: -- without worrying about the Privacy Act. And Jennifer Thompson is one case since she talked about her --

MR. DEMAIORI: And Larry Rand.

DR. ULSH: Yeah, I think that's another one.

MR. DEMAIORI: He spoke publicly.

DR. ULSH: Jennifer Thompson is going to be in this table in terms of the status of where we are with Ms. Thompson. Just to refresh your memory we talked -- she sent in a list of questions after one of our earlier Board

meetings, I think it was after the Boston Board meeting. And she talked about a particular incident that she was concerned about where her badge showed a positive dose and dosimetry -- she said dosimetry could not come up with a reason for that and so they assigned her zero. And so she's concerned about that. I took a look through her RAD file and pulled out the only dose reconstruction -- extended dose reconstruction conducted by the plant that I found and it came out at the Denver Board meeting that wasn't the incident that she was concerned about so I looked at the wrong one. So what we've proposed -- what we have proposed is that we get Ms. Thompson to sign a waiver and send it in and then we'll send out a copy of her records to her and also to SC&A and then we can have a conference call: us, SC&A and -- and Ms. Thompson. We can look through her record and, you know, try to locate what exactly -- what is it that she's concerned about. I sent her I believe around May 5th, and then I sent a follow-up e-mail two weeks later so I guess that would be around the 19th but that's the Friday. I haven't heard back

from her yet but as soon as we get that in we'll (unintelligible).

MR. DEMAIORI: Yeah, and I'd like to state on that for a moment that Jennifer has been working on a nuclear decommissioning proposal. That's an interim proposal, so she simply hasn't had the time. She's been working 16 hours a day, six/seven days a week the last 30-plus days. And professionally she just doesn't have the time. However, I've delivered the proposal today so -- so she -- she -- she will be available for the next couple weeks. And she -- she will provide that. It was just simply she didn't have the time.

DR. ULSH: Okay. Well, that's good.

MR. DEMAIORI: And she's got to feed her family so --

DR. ULSH: I'm glad that she got my e-mail.

MR. DEMAIORI: No, she got the e-mail and --

DR. ULSH: Okay. Good.

MR. DEMAIORI: I've also got an e-mail on it. She told me to articulate that in fact it's not negligence. It's just simply didn't have the time.

DR. ULSH: No problem. I certainly understand

that.

DR. MAURO: I'd like to bring something up. Tony and I were having a little side conversation. I think it has a relevance to everything we do. You have certainly presented in this particular instance, in my mind, the response -- a well researched response. Each of several of the concerns that I guess they were in the affidavit or expressed. And what -- what was this -- what was the trigger for each one of these, and particularly the one for (unintelligible)?

DR. ULSH: Those were the safety concern documents that Kathy was to --

DR. MAURO: Right. Did they go back to a person's particular affidavit or -- or a particular statement made by an individual and these are just follow-up action items that Kathy identified we weren't pursuing?

DR. MAKHIJANI: I guess this came out of her site visits document reviews --

DR. MAURO: Okay.

DR. MAKHIJANI: -- and interviews.

DR. MAURO: Those triggered it. You see -- Let me tell you where I'm going with this.

We’re speaking amongst ourselves now as health physicists and the rationale between, you know, what an individual may have some concerns about and then when -- when you explain what action you made to find out. But in -- in the end I think we’re -- we’re doing -- the most important thing we’re doing right now is we should be speaking amongst ourselves. We have to do that because SC&A is going to make a recommendation to the -- to the working group, and the working group will, of course, regarding these issues. But, I think, and this is where Tony and I were just speaking on the side. You know, really the question becomes the person that raised the concern originally, if that person was sitting in the room right now, each one of these individuals, would they feel as if they got treated right? That is we looked into the matter; we found out what rationally transpired and in fact there is a good reason for what happened and you were, in fact, treated right. I think it’s -- I'm not sure how we do this but somehow this is the one place we have to build that bridge where there is this -- where each of the individuals that

either spoke at the Denver meeting, that either spoke to Kathy during the interview or have an affidavit, I -- I would like to see -- I'd like them to get a degree of satisfaction that in fact a genuine effort was made. Because I feel right now, reading this, that certainly a genuine effort was made to follow -- to bring this to ground. But I'm looking at it from the eyes of a health physicist listening to what transpired. And in that case Tony is -- is -- now, we have all these folks here, all right. Are we -- now, you heard some of the answers to some of these questions. Now -- Right now, Tony, do you feel as if, yeah, I think that it looks like some answers have been resolved or are you a little bit still uncomfortable now? You know, maybe this isn't -- the whole story isn't really told here; there's more to the story?

MR. DEMAIORI: Yeah, when I look at this for me, it's just the tip of the iceberg. If you went through our safety concern process and told every concern requiring dosimetry. This would tell me that this is the symptom and not the disease. What's the symptom? There's

problems over and over and over again. Communication problems from the employer to the employee, from the internal dosimetry department to the employee. These -- These are problems and they're showing a bigger problem. You know, I -- and I can't speak for the rest of the plants because I most certainly have only worked at Rocky Flats, but I believe a couple working sessions ago you articulated you're sorry that the employees at Rocky Flats didn't have confidence in their internal dosimetry department. Well, they most certainly didn't. To quote my predecessor, Jerry Hardin, he considers this whole process to be witchcraft. Bob, I'm sure you've heard that from Jerry a time or two. He doesn't believe that you can reconstruct dose successfully because you don't have all of the facts. Personally I'm not sure you can. And all these concerns -- if one person raises a concern there's a hundred other people that feel the same way, that didn't get their results on time, that were given zeros without explanations, who knew that they were working as hard as the person next to them. And so,

you know, if one person raised the concern there were a hundred people that wanted to. And so to me this says, you know, total lack of confidence in the program. And then if somebody's dying of cancer for you to look at them and say, no, that zero was really because you didn't turn in your badge. Well, you know, I don't need to articulate that person's feelings anymore. Okay. I'm just going to tell you that, you know, with the program changing so many times, with -- with -- with the studies, epidemiology studies -- one says radiation's safe for you; another says no, it's not; with the lawsuits. This is why we're here. This is absolutely why we're here. This is why this legislation was enacted, to compensate. That's the reason the steelworkers are participating at the Rocky Flats site in particular is because we don't believe that you can successfully reconstruct dose. We felt the petition fell within the guidelines. We felt that one, exposure to plutonium is harmful, that it does cause cancer. And two, we didn't feel that we were getting a fair shake on compensation. Not enough of our people were

coming back saying, hey, that was great legislation and it really took care of my family. To the contrary, you know, we keep hearing the dollar number come up and how many dollars have been paid. But they are dollars to the same people. It's not being spread out. So, you know, I'm just going to tell you that, you know, these safety concerns, and there's many of them. This is just a small, small thing. They indicate the problems of the dosimetry program. And not just technical problems. Perception problems. So, you know, that's what they indicate to me. And, you know, when -- when an employee is satisfied that's an exhaustion, okay. You gave him your best answer; what more can I do. So, okay, I'm satisfied until the next time. I guess what the concern really says is I'm watching you.

MR. GRIFFON: I think I'm --

MR. DEMAIORI: I want to make you do the right thing. I believe that's what the concern really says.

MR. GRIFFON: I mean I think I've asked this before but Kathy identified this list of safety reports from the database. Is that -- Is that

how she --

MR. FITZGERALD: No, think what Arjun was saying --

MR. GRIFFON: Oh.

MR. FITZGERALD: -- was she did an on-site visit, did interviews.

MR. GRIFFON: Right.

MR. FITZGERALD: Went through and looked at the documents and came across the safety concerns file; noted that there were safety concerns after a certain time period. I think the --

MR. GRIFFON: Well, because that was my -- I don't think I mentioned this before.

MR. FITZGERALD: Right.

MR. GRIFFON: Before '71 most of them are --

MR. FITZGERALD: Right. That -- That's the case. And she called the ones out that looked like they would speak to -- to the reliability of dosimetry. And I think what's useful here is I think it shows that even though the titles and descriptors for these safety concerns are dosimetry, the actual issues are --

MR. GRIFFON: A little bit different?

MR. FITZGERALD: Right. Which is useful to see.

MR. DEMAIORI: Yeah, she pulled that out of my files.

MR. FITZGERALD: Yeah. Okay.

MR. DEMAIORI: And unfortunately my files don't go back.

MR. FITZGERALD: Right.

MR. DEMAIORI: Now, the company has electronic files of all the safety concerns. I mean our program has been around since at least Rockwell and probably Dow Chemical and so, you know, but I'm telling you that this just shows a lack of trust to me. You asked me how I felt about this. To me if we have these problems where you're not going to show me my dose even though I get it quarterly, I've always gotten it quarterly, but all of a sudden I don't get a record. And then when I do get a record there's a zero on it. And then when I question the zero you didn't turn in your badge. This speaks of conspiracy. It does to me. So I think, hey, wait a minute. I always got my records before. And that's what that tells me, why is today different. Why did you take me off the quarterly and put me on the yearly? Well, lack of manpower. Well, that's not good

enough to protect me. That's what that speaks of.

MR. GIBSON: This is Mike Gibson.

MR. DEMAIORI: Just telling you.

MR. GIBSON: Tony, if you're done --

MR. DEMAIORI: Sorry.

MR. GIBSON: I would just like to add to your comment. I've never been like put on the Rocky site but I have spent 23 years at Mound and, you know, I guess all I want to say is, you know, this -- this lack of manpower and -- and cutting money in the RAD area and not having enough dosimeters and hard time finding records, and I know it's -- and again I'm not pointing a finger at NIOSH but, you know what? If you people went to them and asked them to show you records of if they needed a new van, if they needed a $250,000 or half-million dollar front-end loader, if they needed material for a job, they could lay tons of material on you and show that every bit of that came in on time, on price and everything else, and they met their schedule and they got their award fee. But when it comes to radiation records for some reason it's like you guys have

to pull teeth to get them. And there's like it seems there's always an excuse as to why this is.

MR. LITTLE: Mike, this is Craig Little. I'm with the ORAU team. I -- I -- I do not believe that it is difficult to get dosimetry records out of Rocky Flats. We've not been denied a single thing we've asked for and they've been very forthcoming with things and in very short order.

MR. GIBSON: I'm sorry. Who's speaking?

MR. LITTLE: Craig Little. I'm with the ORAU team.

MR. GIBSON: And you're with ORAU team?

MR. LITTLE: Yes.

MR. GIBSON: Do you have contractor or DOE experience or employment, ex-employment?

MR. GRIFFON: You worked at Rocky. Or no you didn't.

MR. LITTLE: I did not work at Rocky. But I'm telling you that when we have asked for records we have gotten anything we wanted and in the time frame that we needed it with the exception of -- not an exception -- with the constraint that the vast majority of the records are

stored at the Denver Federal Archive Center and they have to go be retrieved physically.

MR. GIBSON: Okay. Let me ask you one more time then. Have you had contractor or DOE employment, DOE contractor employment?

MR. LITTLE: I have had contractor employment.

MR. GIBSON: DOE?

MR. LITTLE: Yes.

MR. GIBSON: Okay. I just wanted to --

MR. LITTLE: Not at --

MR. GIBSON: -- put that on the record, too, and just as I laid my DOE experience on the record.

MR. LITTLE: I was in a --

MR. GIBSON: I will tell you as a union president, an ex-union president I have had a lot of trouble. I've had to go to Congress to get information I wanted so, you know, I just want that on the record, too, that maybe you didn't have trouble but I did.

DR. ULSH: Yeah. I think -- I think that some of this, Mike, might be that I mean NIOSH is the government and you've got the resources to deal with the problem whereas, you know, with individual workers the system might operate a

little bit differently. But I second Craig's opinion -- only as it applies to Rocky Flats, we found the records people being very helpful, very timely and certainly have no complaints about their efforts to provide us the records we requested. In fact, on the contrary.

MR. GIBSON: Again, that's -- and that's fine. You know, I'm not -- I'm just -- I'm giving you my experience. I -- I heard what Tony said and, you know, I just -- I'm one that's been in the field, too, again. And like I said, this -- this is supposed to be a fair and balanced debate and I just want my point on the record also. I've heard -- I've heard the other side of the story and I want this side of the story on the table.

DR. WADE: Okay. Tony has another comment.

MR. DEMAIORI: Yeah, I would like to talk about access to the individual. You know -- You know, I can't speak on behalf of NIOSH or ORAU but currently Rocky Flats is taking six to nine months for the individuals to access their records from the Federal Center through the Privacy Act. If you want to be compensated and you request your records it's six -- minimum of

six -- six months for the individual. In the past we used to request records and we got them blacked out because of security. We mentioned a name and maybe a date and an end and a The and Thee and okay, you've got 27 pages of blackout, which also helps support the fact that there's a lot of distrust out there when you couldn't even access your own records. But currently our people are having a heck of a time getting their records. They're having a heck of a time getting records for employment verification. They're having a heck of a time getting records even from the union to say, hey, I was a union member so they don't have to pay initiation dues to another union on a new job. And it's because we don't have the infrastructure. We're no longer there. My collective bargaining agreement was a 15-day turnaround to an employee's medical, radiological -- it didn't matter, 15 days. Now it's a minimum of six months, a minimum. So -- So -- So I do congratulate you guys on your ability to pull records but we don't have that ability and neither do our people. And that also adds to the frustration. And then I'm

going to take a step further. Like with Jennifer Thompson, like she testified, she's only had three radiological incidents in the 14 years she worked there. Just three. So for you not to have all three of those, wow, that really draws a lot of questions into how accurate your ability is to pull all the records as it does with me. I mean it's not like she -- she was a chemical operator and had been in a hundred different incidents. She was a media relations manager and had three. So her file should be relatively easy to go through and to come out with those three. And then I want to speak to the incident you did come up with. A lot of people -- A lot of people at Rocky Flats left their dosimeter badge on their PPE. When they undressed -- it came out of the PCM II for full-body monitoring. They dropped their PPE in the clothes bin. They walked out; 10 minutes, 20 minutes, oh, my God, I don't have my dosimeter. Well, where were you last? Oh, I left it at the step-off pad. Shoot back in there, dig through the coveralls. There's the dosimeter. There are no follow-up investigations. There

are no follow-up investigations. There are no doses being assigned in those cases. Heck, internal dosimetry doesn't even know the badge was lost until they read a report if a report is filed. In Jennifer's case she insisted on an IRI, self-reporting it. Had she been a steel worker it would have been no harm, no foul, I got my badge. Okay. So -- So you really need to understand that, you know, when you report to us that, you know, we -- we assigned the average dose of the person on the crew you even lose more credibility because we know those things don't happen in that kind of an incident. I mean they just don't. This is the sort of thing that happens day to day and there is no dose because the badge was on the step-off pad. Okay. There is no dose to reconstruct. Nobody would even bother. I mean it's just not a real thing.

MR. GRIFFON: I guess this --

MR. DEMAIORI: It's not.

MR. GRIFFON: Just to -- to reflect on this, I mean that's part of the reason it's -- the work group is drilling down into some of these issues on the data reliability because of the

concern expressed by the petitioners and by the -- the public over the records and the fact that they are concerned that they were, you know, manipulated or whatever. So I think it's very important that the Advisory Board come to grips with this and be able to independently say, you know, yes or no, there's problems here or there's not. At least that's another level of -- it's not going to certainly answer everyone's concerns I'm sure, but at least it's another level of independence. I wanted to get back to the -- because we're at quarter of five.

MR. ELLIOTT: Can I make one comment real quickly?

MR. GRIFFON: Sure.

MR. ELLIOTT: I agree with you. I think it is important that you guys are involved and engaged in -- in this trek with us trying to find out where the truth lies. I'd like to comment back to the -- Tony though.

MR. GIBSON: Larry, could you speak up, please?

MR. ELLIOTT: Yes, I'll try to speak up. I want to make it very clear that what you were talking about Tony, I don't disagree with what

-- your account of individual workers trying to get access to their data, their records through the Privacy Act. I think that's something that I would encourage you to encourage those people to go to the DOE and make those complaints to the DOE. They're the ones that are holding up Privacy Act responses to you all. But as I learned about this out in Denver I was very quick to get to that person who raised this in my awareness and say to them, even if you're not -- this person was not a claimant but he was talking about having difficulty getting his dose records through the Privacy Act request. And I said, ask us; we'll help you; we'll get it for you. And even though he's not a claimant we're -- we're going to do that. And I want it also known that we don't look for the type of data that your -- your folks are requesting under Privacy Act. They're probably requesting their cumulative dose data, their annual summary data or whatever records DOE has on them that they think they will provide under Privacy Act. We go beyond that. We don't take annual summary data. We don't take cumulative dose data. We want the original data. And we

have been very fortunate of late, in the last three or four years I would say, of getting DOE to respond very quickly to our needs. There's been a lot of leverage placed on these claimant needs for their dose data and we've been very -- I think very fortunate of late. If it would have been a different time, as Dr. Bistline and Mark Griffon knows -- if it would have been eight years ago, we would still have been waiting on that first claim to get out the door probably. But I hear you loud and clear. I want you to know that we're standing to help if we can get anybody's dose data to them, claimant or not.

MR. GIBSON: Larry, if I could just shortly respond, and I -- I appreciate what you said. But I was even -- I was even talking about when I was the elected representative of the people with their written consent, I couldn't get their data. I got stonewalled and I will tell you this. I heard the records manager of the contractor telling the plant manager they were spending too much money trying to get records out once this bill passed. And they were in a turf war with DOE saying DOE needed to pay for

it and it not come out of site budget. So I don't know.

MR. ELLIOTT: I don't doubt what you say.

MR. GIBSON: I guess that's probably changed now with a lot of these contractors shut down but --

MR. ELLIOTT: I'm not doubting what you say. I'm sure it's accurate and -- and -- and it's recent I know. But I'm just saying that we have worked very hard on the government side to get access to this information in a timely way.

MR. GIBSON: And I believe that. And I -- And I'm sure the claimants appreciate it.

MR. ELLIOTT: And it's because of the experience that you have just mentioned.

MR. GRIFFON: Okay. I think I just want to try to get back to finish up our agenda here if we can. The one thing I wanted to ask on the safety concern question. Has there been any attempt to -- there must be a database of these safety concerns?

DR. ULSH: I think again --

MR. FITZGERALD: Remember the context of this. This was a very quick, abbreviated site visit in light of the fact that this was moving

relatively fast and we went ahead and did it. It wasn't intentionally a long research project. It was in the context of the SEC. So she went to the site, talked to Tony, was able to identify safety concerns that had some bearing on dosimetry without even being able to investigate it, and use it as a sample. All these are samples. It's not a perfect, you know, lengthy process --

MR. DEMAIORI: And these are --

MR. FITZGERALD: -- designed --

MR. DEMAIORI: -- complaints.

MR. FITZGERALD: -- designed to be a sampling process and so I think this was to sample what was taken and I think certainly we've got the evaluation.

MR. GRIFFON: Yeah.

MR. FITZGERALD: It makes you want to look at it again but I -- I think --

MR. GRIFFON: I guess wondering, you know, if it is a sample, I guess I was just curious, especially on the zeroing dose or the frequency of bioassay -- those two stand out amongst these -- if -- if there was any way to key word search a database.

MR. FITZGERALD: I was intrigued. I hadn't heard this mentioned of the -- somebody having electronic records. Who would have that?

MR. GRIFFON: That's what I --

MR. DEMAIORI: I believe Stolar (ph) is in control of all records now. But we have a safety database out at Rocky Flats. Everything that was put on paper was put in the electronic data system.

MR. FITZGERALD: That may exist somewhere. Somebody has it.

MR. DEMAIORI: Absolutely.

MR. FITZGERALD: I hadn't heard of that. That would be something that we need to talk about.

MR. GRIFFON: Yeah, that's what I was going to say is if -- if -- because this issue is still looming out there and I think very important, that this concern about zeroing of doses. And if we went through safety concerns and did keyword searches and found that this concern was being raised over and over, you know. Maybe -- Maybe it would it would come up empty but I -- I wonder if it's worth finding out if there's a database and then doing keyword searches.

MR. FITZGERALD: You said Stolar???
MR. DEMAIORI: Well, Stolar's got the contract now through (unintelligible).
MR. FITZGERALD: Oh, ORAU and everybody's gone that --
MR. GRIFFON: Do you know, Brant, if this database exists or --
DR. ULSH: I don't but I don't have reason to doubt what Tony's saying.
MR. GRIFFON: Yeah, right.
MR. DEMAIORI: Well, yeah our human -- well, our IR department somehow was connected to the company side of the Joint Safety Union --
DR. ULSH: Yeah.
MR. DEMAIORI: -- Committee. At the time when I took over my job at the meeting was the company's representative. And we -- we have an electronic database. I mean there's always been a company representative on the company side of this Committee. And they reduced everything to -- to an electronic database. And everything I have is hard copy.
DR. ULSH: Right.
MR. DEMAIORI: And then --
MR. GRIFFON: And the database would go back to

what time period do you know or all the way back?

MR. DEMAIORI: I believe it goes all the way back because -- because we've been active in safety from -- from the early '70s at least -- at least. You know, my records, as you saw, didn't really pick up till '86; well, almost nothing prior to '86 as far as hard copy safety concerns. But we negotiated in the '70s Dow Chemical Company Union Safety Committee.

DR. MAKHIJANI: Mark, you had said that the research that NIOSH has done so far on the safety concerns, I think it -- it is worthwhile if there is a database to sample it.

MR. GRIFFON: Yeah.

DR. MAKHIJANI: But my -- my own kind of feeling on this whole question of deliberately manipulating the data records and zeroing out high doses and the kind of things that are there in the affidavit, the list that NIOSH is now making, it -- it would seem if there are these 23 instances, and if each one of those things can be tracked down -- because there are obviously people who felt very strongly that their doses were manipulated -- that I think

would -- would -- again I'm not sure how many communication -- they seem to be mostly communication type of issues.

MR. GRIFFON: Yeah.

DR. MAKHIJANI: And so while it's worthwhile to see whether they are data type of issues in safety concerns, I think we have got a good list of allegations of -- of data problems that it would seem to me, you know, without downgrading any of them, but it would seem to me that it would be very good to prove one way or another if those were -- those were followed. And then if you have John's suggestion, at least we could sit down with a few of the people and look at the affidavits and say this is what we found. What do you think? And that would be pretty interesting, powerful.

MS. JESSEN: Well, in the evaluation report we address nine affidavits specifically. The nine that were in the first part of the petition we specifically addressed those in the report. In this matrix that I was talking about a little bit earlier we address all of them that came in with part A and part B. And in addition to the

-- in the petition there are also little sentences and statements of various other concerns that have been pulled out, not only by SC&A but by NIOSH as well. And we are addressing those as well, in addition to statements that were made to Brant from Tony. So there are a lot of -- a lot of issues that are being pulled together now and we're doing a lot of research into those issues. So -- So they will be addressed. It's just, you know, like Brant says, it just takes time to -- to pull all of this together.

DR. ULSH: Keep in mind, and I don't want to mislead anyone about what the product is going to be. In some cases we're going to pull the string as far as we can, and it's going to be inconclusive probably.

MR. GRIFFON: Right. I mean I understand. I mean I understand there's a resource component to this, too, and I understand sometimes searching this database for these titles that it can be misleading as we found out.

A lot of it is reporting not necessarily the issue of zeroing badge or whatever.

I -- I was just looking for another mechanism

maybe to look at whether it could be a systemic problem here or whether it was isolated cases. I think most of the affidavits in the petition are from later years as well, but --

DR. MAKHIJANI: That's true, where the workers were.

MR. GRIFFON: Maybe not, maybe not.

DR. ULSH: Maybe not. There's certainly some from earlier years. Right, Tony? I mean I think so.

MR. DEMAIORI: There's --

DR. ULSH: Not the '50s but --

MR. DEMAIORI: Well, most of the guys from the '50s are dead.

MR. GRIFFON: Yeah, yeah.

MR. DEMAIORI: I mean there's no pun intended here but, you know, I offered a guy a job down at Los Alamos building bombs and he told me point blank everybody that I worked with is dead, Tone. I'm out of the business. Forget it. And that -- that is a prevalent attitude. I mean there's not a lot of old chemical operators, experimental operators still alive from those days.

MR. GRIFFON: But I mean I just thought it was

worth identifying the (unintelligible) database and -- and looking at it and maybe considering whether it was feasible. I mean I don't want to spend a lot of resources on leadings that are potential dead ends. If you had a hundred, you know, a hundred hits for the same sort of title, I'd be reluctant to -- to look at all of those certainly, you know.

DR. ULSH: We'll ask -- We'll ask Amy Wilson if she knows about the safety concern database.

MR. GRIFFON: Right.

DR. ULSH: And maybe we'll do a couple of keyword searches and report back to you.

MR. GRIFFON: I -- I think that's --

DR. ULSH: At that point we can evaluate.

MR. GRIFFON: You probably don't want to take it any further yet, you know. That's for sure.

MR. GIBSON: Excuse me, Mark. Mark and everyone, this is Mike. I'm sorry to end a seven-hour stimulating conversation but as a single parent I got to get off here now and take my child to soccer tryouts.

MR. GRIFFON: I'll hold -- I'll hold down the work group otherwise.

MR. GIBSON: But I just wanted to let you know

that I'd be signing off.

MR. GRIFFON: Okay, Mike. Thanks.

DR. WADE: Thank you.

MR. GIBSON: We will chat again.

DR. WADE: There's not a quorum from the Board, so you can end your work. You can hold these people with your personality.

MR. GRIFFON: I think we all have flights to catch so -- I think we want to move on past the safety concerns. I mean you gave --

MR. GIBSON: I'll be signing off so -- We've had a good conversation. Thank you all.

MR. GRIFFON: Thanks, Mike.

DR. WADE: Thanks.

MR. GIBSON: Bye.

DR. WADE: Bye.

MR. GRIFFON: After the safety concerns topic you -- you mentioned sort of your status on logbook reviews already. But the other things I had down here from -- from Joe's memo report, external dose procedures. That was that other table I think.

MR. FITZGERALD: That was, yeah, the list there, the list of items from the dosimetry problem logbooks to see whether there'd be any

value from -- yeah.

DR. ULSH: We are checking -- we've talked with I think Joe Aldrich (phonetically) who is a past mentor of external dose dosimetry at Rocky Flats and he turned us onto a couple of Health, Safety and Environment lab manuals and a QC manual. We're trying to get those documents. We've got one of them. We're looking for the other one right now.

MR. GRIFFON: For the earlier time periods, right?

DR. ULSH: It's the earlier --

MR. LITTLE: '85 -- probably they went into effect probably late '70s.

MR. GRIFFON: Just --

MR. LITTLE: They were still in effect in the early '80s --

MR. GRIFFON: Right.

MR. LITTLE: -- to '85, '86.

DR. ULSH: We think it might be valid, but we can't say for sure until we actually see the documents so we are looking for that. We've also -- I've asked Joe to take a look at that particular table that you're probably looking at right now, Joe.

MR. FITZGERALD: Right.
DR. ULSH: Just to tell us, what would a dosimetry worker do if he came across this problem? What's --
MR. FITZGERALD: Well, I -- I think again Kathy's been looking at these and really there isn't any documentation on her investigation or follow-up investigation so far. So it's not clear if --
DR. ULSH: Right.
MR. FITZGERALD: -- anything has been done per se.
DR. ULSH: All the documentation you see is in the logbook --
MR. FITZGERALD: Right.
DR. ULSH: -- and I'm not sure that there would be much past the logbook -- in between the logbook and what you see at this point for workers' dosimetry. I don't know if there's anything in the middle.
MR. FITZGERALD: Well, I think that's the test. I mean I believe, you know, there wasn't any a priori assumption on this but looking for sources of information and if these sources don't pan out, they don't pan out.

MR. GRIFFON: So this is on an ongoing basis.
MR. FITZGERALD: Ongoing, right. Yeah.
MR. GRIFFON: And I think you've -- you've discussed missing records but there's -- item four in your report, destroyed records?
MR. FITZGERALD: This was the trailer issue. Just the notion that I think you guys were going to follow up and see if there's any record or any history on that.
DR. ULSH: We are in the midst of following that up right now.
MR. GRIFFON: And then item five is missing records. Is that different than what we've discussed already with missing --
DR. ULSH: Is that the '69 gap? Yeah.
MR. GRIFFON: This is the '69. This is '69.
MR. FITZGERALD: This is '69.
MR. GRIFFON: We kind of discussed it earlier.
MR. FITZGERALD: We discussed it earlier. This is the specific examples, and I think you accounted for the fact that you're still looking at it.
MR. GRIFFON: Just wanted to go through those.
DR. ULSH: Right.
MR. GRIFFON: Make sure we didn't miss

anything. I know it's --

DR. WADE: A lot of people on the edge of their seats.

DR. ULSH: Mark, it would be really helpful if coming out of this meeting, and I'm sure you plan to do this anyway, if we can get an updated matrix.

MR. GRIFFON: Updated matrix.

DR. ULSH: Well, just because I mean in the SC&A --

MR. GRIFFON: Yeah.

DR. ULSH: -- there were several pieces with issues in them and it's getting hard to keep track of.

MR. GRIFFON: Yeah, I think for all of us to sort this out we need to -- to update the matrix.

DR. ULSH: That would be very helpful.

MR. GRIFFON: And -- And I want to understand, Karin, the matrix you've described.

DR. ULSH: Don't say matrix.

MS. JESSEN: I'm sorry.

MR. GRIFFON: I know -- I know. Well, the -- the -- the listing that you've described.

MS. JESSEN: Yeah, the listing. That's good.

MR. GRIFFON: Should that be rolled into this process or is that -- is that going to be provided to the work group?

DR. ULSH: Oh, sure. Sure. Once we finish it. I mean keep in mind that we've already talked about a number of the individuals that are --

MR. GRIFFON: Right. It overlaps I think.

DR. ULSH: Yeah, yeah, yeah. Absolutely.

MR. GRIFFON: But it has -- it goes further than what we've discussed here, right? It's --

DR. ULSH: It'll be everything in the petition.

MR. GRIFFON: There's some new issues, right?

DR. ULSH: Tony and I had a conversation where he gave me four examples, one of which I think was already in the petition but three others that were not. That's going to be included in there.

MR. GRIFFON: So there's more issues that we haven't discussed necessarily in our work group process?

DR. ULSH: Well, it falls under the same umbrella of -- of issues and data integrity issues.

MR. GRIFFON: Yeah. Yeah.

DR. ULSH: Different examples.

MR. GRIFFON: Different examples, right.
DR. WADE: There's also a power to bring it all together and look at it in its totality. I think that's what Arjun was trying to say --
DR. ULSH: Right.
DR. WADE: -- how you feel about it.
MR. GRIFFON: I agree. Yeah, I will update the matrix then.
DR. ULSH: I figured you would.
MR. GRIFFON: And I -- I don't -- well, I'll have to talk with Lew a little bit about where Rocky's going to be on the agenda and whether we want more time in the subcommittee for, you know, more of these in-depth discussions or --
DR. WADE: What you're thinking --
MR. GRIFFON: -- the full committee, yes. We'll check it out. All right. Is there anything else before we close?
DR. WADE: Thank you all very much obviously for a long day but a productive one.
MR. GRIFFON: Yeah, thanks a lot.
DR. WADE: Thank you.
(Whereupon, the working group meeting was adjourned at 5:00 p.m.)

CERTIFICATE OF COURT REPORTER

STATE OF GEORGIA

COUNTY OF FULTON

I, Steven Ray Green, Certified Merit Court Reporter, do hereby certify that I reported the above and foregoing on the day of May 30, 2006; and it is a true and accurate transcript of the testimony captioned herein.

I further certify that I am neither kin nor counsel to any of the parties herein, nor have any interest in the cause named herein.

WITNESS my hand and official seal this the 4th day of July, 2006.

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STEVEN RAY GREEN, CCR

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