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

WORKGROUP MEETING

ADVISORY BOARD ON

RADIATION AND WORKER HEALTH

SANTA SUSANA

The verbatim transcript of the Workgroup Meeting of the Advisory Board on Radiation and Worker Health held at the Airport Marriott, Hebron, Kentucky, on August 26, 2008.

STEVEN RAY GREEN AND ASSOCIATES
NATIONALLY CERTIFIED COURT REPORTERS
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C O N T E N T S

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P R O C E E D I N G S

(10:00 a.m.)

WELCOME AND OPENING COMMENTS
MR. TED KATZ, DFO

MR. KATZ: Good morning. Good morning. This is Ted Katz. I'm the Designated Federal Official -- Acting -- for the Advisory Board on Radiation and Worker Health, and this is the first meeting of the workgroup on Area Four of the Santa Susana Field Laboratory site profile and SEC. It's the first meeting, and we're just going to run through some administrative work and then we're going to turn it over to the Chair, Mike Gibson.

So first thing is running through roll call and conflict of interest statements. So starting with the Board present in the room, if you'd go round, starting with Mike, and identify yourselves, please.

MR. GIBSON: Mike Gibson, Advisory Board, no conflicts.

MS. BEACH: Josie Beach, Advisory Board, no conflict.

MR. SCHOFIELD: Phillip Schofield, Advisory

Board, no conflict.

MR. KATZ: And then Wanda?

MS. MUNN: Wanda Munn, Advisory Board, no conflict.

MR. KATZ: Okay, and are there any other Advisory Board members present on the phone?

(No responses)

Okay, so we do not have a quorum, which is good for a workgroup meeting.

Now going to the ORAU/NIOSH team, if you'd -- starting in the room, please.

MR. ELLIOTT: Larry Elliott, OCAS, no conflict.

MS. THOMAS: Elyse Thomas, ORAU team, no conflict.

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

MS. HUGHES: Lara Hughes, OCAS, no conflict.

MR. MORRIS: Robert Morris, Oak Ridge team, no conflict.

MR. KATZ: Okay. And then on the phone, NIOSH/ORAU?

MR. POTTER: Gene Potter, ORAU team, no conflict.

MR. KATZ: Okay, and now SC&A in the room, please.

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

MR. BERONJA: Greg Beronja, SC&A, no conflict.
MR. KATZ: And then on the line, SC&A, please?
DR. BEHLING: Hans Behling, SC&A, no conflict.
MR. KATZ: Great. And now do we have any Congressional staff who would like to identify themselves for the record?
MS. DALY: This is Cecilia Daly with Congressman Gallegly's office.
MR. KATZ: I'm sorry, could you please just repeat that? It was hard to hear.
MS. DALY: Cecilia Daly with Congressman Gallegly's office.
MR. KATZ: Congressman Gallegly's, with Celia Daly. Is that correct?
MS. DALY: Cecilia, but close enough.
MR. KATZ: Cecilia -- Cecilia Daly, Congressman Gallegly's -- thank you, and welcome.
MS. DALY: Thank you. And -- and now I believe we may have the petitioner for Santa Susana on the line. Is that correct?
MS. KLEA: Yes, good morning. This is Bonnie Klea and I'd like to thank you, Cecilia, for getting on the line this morning.
MS. DALY: Oh, sure.
MS. KLEA: I didn't know you were going to be

here.

MR. KATZ: Okay, and welcome, Bonnie.

MS. KLEA: Thank you.

MR. KATZ: I'm glad you could make it.

MS. KLEA: Yes, thank you.

MR. KATZ: And now are -- are there any other public members who would like to identify themselves?

MR. RUTHERFORD: Yes, this is Phil Rutherford from the Boeing Company. Good morning.

MR. KATZ: Good morning.

MR. ELLIOTT: Could you get his first name again?

MR. KATZ: Phil Rutherford.

THE COURT REPORTER: The Boeing Company?

MR. KATZ: Boeing Company. Any others? And then last but not least, any other -- any other NIOSH or federal employees on the line, please?

MS. HOMOKI-TITUS: Liz Homoki-Titus, HHS.

MR. KATZ: For HHS, thank you.

MS. ADAMS: Nancy Adams, contractor to NIOSH.

MR. BROEHM: Jason Broehm, CDC.

MR. KOTSCH: Jeff Kotsch, Department of Labor.

MS. BURGOS: Zaida Burgos, NIOSH.

MR. KATZ: That's Zaida Burgos. Okay, any

more?

MS. BARRIE: This is Terrie Barrie with ANWAG on the line.

MR. KATZ: Oh, welcome, Terrie.

MS. BARRIE: Thank you.

MR. KATZ: Any others?

(No responses)

Okay, then I will -- one last remark -- administrative remark and then I'll turn it over to Mike. That is, everyone who's on the line if you would please mute your phones it'll -- it just keeps from -- the phone disturbance in the room. So if you don't --

UNIDENTIFIED: (Unintelligible) star-6.

MR. KATZ: Star-6, right, star-6 or a mute button, either one works.

UNIDENTIFIED: Okay.

MR. KATZ: And the last thing is please, if you do disconnect sometime during the call, please don't put it on hold. Just completely disconnect and call back in 'cause -- 'cause the hold function also disrupts the calls for the other listeners.

Thank you very much. And Mike, it's all yours.

INTRODUCTION BY CHAIR

MR. GIBSON: Thanks, Ted. This -- as Ted said, this is the workgroup on Area Four of the Santa Susana Field Lab site profile and SEC. Today's agenda's pretty simple. We're just going to start with the -- the NIOSH site profile review, and SC&A has taken a look at that and they've made some comments that we have here in a matrix. And then this morning we got a paper copy of a draft response from NIOSH, which I think John's probably reviewing right now. So I guess what we'll do is we'll just start with the issues matrix and maybe let NIOSH give a little bit of explanation for their response and give John a little time to think about it and respond to it.

DR. NETON: Could I -- this is Jim Neton, I -- start with a little clarification of what we really want to accomplish today, because I think this is sort of a unique situation in that this is a site profile review that has been sort of in the middle of an ongoing SEC petition process. And it's my understanding that SC&A reviewed the site profile with an eye toward SEC issues, but I don't know that SC&A actually reviewed the evaluation report as

well.

MR. BERONJA: We looked at the evaluation report, but it wasn't really a formal review at all.

DR. NETON: Right.

MR. BERONJA: We focused on the site profile and just said if there were comments that were applicable to the SEC, we noted those. That was -- and we can comment a little bit more beyond that, but that's primarily what we did, so it's kind of a, you know, superficial look.

DR. NETON: Yeah, see, I guess maybe the -- the thing in my mind is that the site profile was written not with necessarily the intent of doing all dose reconstructions. It was written with the intent of providing the best foot forward on what we could do for current dose reconstructions in-house, and by definition it's not necessarily a totally complete document. Whereas the evaluation report for the SEC really is supposed to be that, in the sense that it should address how we would approach all dose reconstructions for the whole class. So we have a little bit of a disconnect there in my mind. It doesn't mean we can't

proceed, but I just -- keep that in mind, and do we want to evaluate these items -- do you want to essentially do -- what we did in the past is sort of scrub this list of 39 findings for SEC-related issues, or do we want to just go about closing them all one by one or discussing closure? I'm not sure -- I guess it's Mike's prerogative how we want to move forward.

MR. GIBSON: Well, one thing I don't think we're going to do, in my opinion, is we're not going to close issues. We can discuss them and try to get a better feeling for them, but it is unfortunate that DOE hasn't released the material yet so the -- the plaintiffs and the petitioners have not had a chance to see it. So you know, I am going to hold actions open that, you know, the petitioners can come back and -- once they see the material, if they have an issue that we'll address.

DR. NETON: But I -- I guess the situation is right now that NIOSH in April, I believe, presented our evaluation report and recommended that at least two years be added to the SEC, and that's being held in abeyance by the Board

until the SEC -- until this process, I guess, can inform the full Board better. So is it -- is it better for us at this point to identify SEC-related issues that really need to be evaluated in depth, you know, or -- or just leave everything open as a site profile issue at this point?

MR. ELLIOTT: We would propose to focus on the SEC issues so that the -- it would inform the Board's deliberations. Not -- we're not pushing to close issues, Mike. We -- we're pushing -- here. If we're pushing anything, it's to identify what findings SC&A have from our site profile that are relevant to the SEC petition evaluation so that that can move forward as expeditiously as it possibly can. That's what I think we're asking for.

MR. GIBSON: Okay, yeah, that's fine. It's -- you know, we don't want to see the -- the SEC petitions held up any longer than necessary, so that's fine.

DR. MAURO: I have one thought. Basically we did a site profile review, and -- and in our judgment there were certain issues that emerged that we said -- and this is purely an SC&A

perspective -- that would appear to be something that might be of concern from an SEC, taking into consideration the evaluation report and also taking into consideration our judgments on what constitutes something that might represent an SEC issue. And that's what that last chapter is about in our -- in our report.

MR. GIBSON: Uh-huh.

DR. MAURO: Now one of the things that we didn't do that's important and that often is done on an SEC evaluation report review is we go in and we do what we call a data adequacy and completeness analysis, which is something that is generally a little bit more in depth than what we do normally in a site profile review. For example, as you're probably aware, on Fernald and on Nevada Test Site right now we're in the midst of a formal review of specific aspects of the SEC petition dealing with the data adequacy. For example, internal dosimetry is an issue here, and it's an issue in many of these sites. And one of the things that often a working group and the Board requests SC&A to do when we are engaged in an

SEC process is to go into the records and to confirm that yes, there are sufficient, for example, internal dosimetry records from the perspective of years when work was going on, different facilities and activities that were going on, different job categories. And usually what we normally do is do a sampling of the -- the actual data and get a sense of the completeness and robustness of the data from the point of view not only of doing the dose reconstructions for the workers themselves that have the data, but also from the point of view of building a coworker model that, from the population of datasets that do exist, in theory you can use that data to build a coworker model. These are always very fundamental to addressing SEC-related issues.

I don't believe any of that level of analysis was done in this particular site profile review --

MR. GIBSON: Uh-huh.

DR. MAURO: -- so from that perspective it would be inappropriate to -- to refer to it as an SEC petition review. It was more an introduction to some of the areas we think

might be of interest to the -- and quite frankly I -- I guess I have a question to the workgroup. I don't recall whether this workgroup has the dual mission of both SEC and site profile or only site profile. I forget (unintelligible) was authorized.

MR. GIBSON: Yeah, we have both -- both.

DR. MAURO: We have both. Okay.

MR. BERONJA: I guess the other comment I'd made is that I think SC&A is very open to discussing all these issues that have been noted as SEC issues. I think some of them are border line. There's also some that have not been noted as SEC issues that we believe may be SEC issues, so I think the discussion here -- you know, if we go that direction -- would be beneficial, coming from both sides there.

DR. NETON: Yeah, we have no problem. We've provided responses to the extent we can, given that this is a fairly new review. I mean we haven't had this in our possession -- I guess it came out in August, early August sometime, and we've gone through them point by point and have some draft responses here we're more than happy to go through and discuss one by one. I

think there's 39 findings, if I counted right.

MS. MUNN: This is Wanda. I have a request. My first question was going to be do we have any NIOSH responses at all to any of the matrix items, and I'm just hearing that there are some responses this morning. I do not believe I have received them. My e-mail is silent on that issue.

MR. ELLIOTT: You have not. You have not, Wanda.

DR. NETON: We did not distribute them electronically. We can --

MR. ELLIOTT: This was just recently generated and it's --

MS. MUNN: Yeah, I gathered that.

MR. ELLIOTT: -- not been Privacy Act reviewed.

MS. MUNN: Is there any possibility that I could get it as a single --

DR. NETON: We have to work on that. I'm trying to figure out the best way to do that.

MS. BEACH: I can send her one, or you can mail one.

DR. NETON: No, no, we can -- we can e-mail one. I think I can e-mail it as long as it goes directly to Wanda.

MS. MUNN: Yeah.

DR. NETON: If I can figure out where I can get an electronic copy right now, get my hands on one.

MS. MUNN: If you can, I'd appreciate it. Otherwise I can operate blind.

DR. NETON: I think I might have it on my BlackBerry, so bear with me and continue with the conversation. I'll see if I can forward it to you.

MS. MUNN: That'd be helpful. Thank you, Jim. I'll be looking at my e-mail screen to see. My second question is for John or other SCA members --

DR. NETON: I'm sorry, we have one on the laptop. We need your e-mail address, though, Wanda.

MS. MUNN: W-i-m-u-n at AOL.com.

DR. NETON: Great, okay. You should be getting it shortly. Thanks.

MS. MUNN: Thank you.

DR. NETON: Sorry for that, but I didn't realize that you weren't going to be here this morning.

MS. MUNN: Yeah, well, sorry. I would have if

I could have.
There's -- the other question is, John, from your rough estimation, how many of these matrix items that we have before us would you guesstimate to be somewhere in the -- in the realm of -- of SEC-related rather than -- than general comment for the TBD?
DR. MAURO: The -- our site profile review, the document, has -- I believe it's chapter five, the la-- last chapter, has a separate section that answers that question. That is -- and I think there's a handful of them, I'd have to count them --
MS. MUNN: That's all right. There's no need. I just wanted to get a general feel.
DR. MAURO: We did -- we -- we broke them out, and I don't recall the number, but --
MS. MUNN: That's okay. We'll -- we'll get to that I'm sure as we go through it later in the day.
MR. KATZ: Okay, Wanda, it was just e-mailed to you so it -- it -- however it takes to go through the servers, it'll be there.
MS. MUNN: Thank you, I appreciate that.
MS. BEACH: I have a count of 17 SEC issues

listed from SC&A.

MR. BERONJA: Within the site profile review.

MS. BEACH: Yeah.

MR. BERONJA: And then I think we actually had six issues as part of the site -- six broad issues as part of the site profile review in that section five.

DR. MAURO: If I -- I have a suggestion, thinking about how best to go forward, given this duality. My sense is to go through -- this might be a little bit different than your perspective -- one by one, and I'll tell you why I think it might -- because as we march through, we'll be in a position around a table to have a general sense of yes, we do agree that this seems to be something that would be an SEC or not. And -- as opposed to immediately jumping to the SECs that we perceived as being -- which may -- everyone may not agree to that.

DR. NETON: I -- I agree with that.

MR. ELLIOTT: Yeah.

DR. NETON: I think some of these will go quickly. I mean there's a number of these are more administrative, quite frankly.

MR. ELLIOTT: I think all we're asking for, John, is to come out of this meeting with a sense of what SEC issues have been identified that we both can start working on.

DR. MAURO: I -- I guess that I --

MR. ELLIOTT: That's where we want to be when we leave today, if that's satisfactory to the Chair. You know --

DR. NETON: Or even close some of the SEC issues --

MR. ELLIOTT: Yeah, if we can close them, all the better, but --

DR. NETON: -- provide responses.

MR. ELLIOTT: -- but that's a...

DR. MAURO: Sure, that's fine.

MATRIX REVIEW

MR. GIBSON: Yeah, let's just -- let's start through the matrix then and --

DR. NETON: And do we want SC&A to --

MR. GIBSON: -- identify the issues.

DR. NETON: -- sort of like give a little brief summary of what their concern or finding was and then we can sort of provide our discussion points on that?

MR. BERONJA: Sure, we can do that. And -- and

just for clarification, the issue numbers really correspond with the particular issue numbers in the site profile, to make them consistent. And John, I'm not sure if historically that's how it went -- how it had been done, but that's how I did it here.

4.1-1

The first particular one as far as the presen-- presentation of dates is that there was some inconsistency as far as when activities actually began in Area Four, so that was the general comment there. There were some -- you know, a lot of -- there were some comments on '53, some on '55, some later. And actually -- I mean from a consist-- you know, it would be more of an observation issue except for the fact that the SEC is pinned to 1955. So to the extent that we're talking about earlier -- an earlier period, that becomes more of an issue.

MS. HUGHES: To -- to answer that, the 1955 with the SEC is because the covered period for that site starts in 1955, even though nuclear operations started in 1953. Other than that, the -- the point you raise that Santa Susana Field Lab was founded in 1966 is clearly a typo

and it -- it will be corrected in the next revision after the site profile.

MR. BERONJA: So when -- when you say the covered period, that just means from a legal standpoint as part of the law and what -- what's got to be covered?

MS. HUGHES: Yes, DOE issues a date range that -- when this site is covered under this Act.

MR. BERONJA: Uh-huh.

MS. HUGHES: That starts in 1955, versus operations started up in 1953.

MR. BERONJA: Uh-huh.

MS. HUGHES: So that might cause a little bit of confusion.

MR. BERONJA: Okay.

DR. NETON: And we agree that there's a -- a typo in the document and we'll definitely correct that. I don't sense this actually arises -- raises to the level of --

DR. MAURO: But -- but -- well, it was a good point, though, 'cause one of the concerns I did have as part of the review team, and the idea that right now the SEC period was '55 -- I believe '55 to '58 --

MR. BERONJA: Right.

DR. MAURO: -- and I did notice that we did have a number of comments where there were some data inadequacies as we proceeded pre-1955 -- especially related to activities in internal exposures. But I think what I heard you say is that's really off the table because by definition that time period is not covered under the Act.

MS. HUGHES: Yes, we did not -- we do not consider pre-1955 really.

DR. MAURO: Okay. So there were no MED or AEC -- I guess it would be AEC -- contract activities going on at Santa Susana prior to '55, and that's an important issue related to SEC.

MR. ELLIOTT: We can only rely on DOE's review and establishment of the covered period.

DR. MAURO: Okay.

MR. ELLIOTT: If there are information that come to light that would argue that the dates are not accurate that DOE has established, then we would share that with the Department of Energy and ask them to review it. So if -- if that's -- come to your -- to your notice, we would appreciate having such so we can pass it

along.

DR. MAURO: Yeah, we don't have any information to the contrary. I was just --

MR. BERONJA: You know, I guess the only other comment -- maybe in the evaluation report, I'm not sure if that was elaborated on as far as the covered period, just to differentiate maybe before activities before '55 or after '55, and you know, the reliance on '55 might be working on -- that might be off the table right now but as far as the evaluation report, I don't remember that being --

MS. HUGHES: Well, I do believe the suggested class was -- yeah, starting 1955, I believe January, 1955. I would have to look it back up and on to December 1958 --

MR. ELLIOTT: It's based upon the covered period.

DR. MAURO: Yeah, see, that's -- I think that's the essence of it, the -- in essence, there's a contract. And if there's a date of the contract with the AEC that says it started in '55, and before that I guess what, commercial operations?

MS. HUGHES: Yes.

DR. MAURO: And if they were commercial operations, they're off the table.

MR. ELLIOTT: We were probably not explicit in our language in the evaluation report on that point. It's -- it's an implication.

MR. BERONJA: And I guess the other question I'd ask, and I don't -- I don't know the rules and everything like you guys do, but as far as the petitioner petitioning from a certain period, if it's discovered that the period really should have been beforehand, does -- does the group then take that into account and move it back or just rely on what the petitioner has requested?

MR. ELLIOTT: We would -- we would consult with the petitioner --

MR. BERONJA: Uh-huh.

MR. ELLIOTT: -- and if the petitioner's definition said, in this case, 1953, we would counsel the petitioner that that period of '53 to '55 is not part of the covered period.

MR. BERONJA: Uh-huh.

MR. ELLIOTT: The petition would not be valid --

MR. BERONJA: Uh-huh.

MR. ELLIOTT: -- unless they had information contrary to that.

MR. BERONJA: But you would do the same thing if it was the other way around, if the petitioner did '55 and you discovered there were actually AEC or activities --

MR. ELLIOTT: We'd go to DOE and we'd say you need to review this information and determine -- and the Department of Labor -- and determine whether or not the covered facility designation needs to be changed.

MR. BERONJA: So maybe the result of all this, at least in my opinion, is that I don't think this is an SEC issue if there's pretty good documentation that there were no AEC or covered activities prior to 1955, so as long -- as long as we can kind of, you know, kind of stand behind that, I don't think this was an SEC issue. So maybe that's something that one of the parties needs to just confirm and say yeah, we don't -- we know that there weren't any of these activities and provide references. Did that make sense?

DR. NETON: To some degree, yes, but we -- you know, we're -- we are normally not in the

business of going and re-verifying what the Department of Energy and Department of Labor have established as the legally covered period.

MR. BERONJA: Oh, okay.

DR. NETON: They do this up front. They do a -- a fairly extensive evaluation of contracts and such. The only time we really become engaged is if we see, like Larry said, there's a discrepancy. Like in Bethlehem Steel, we noticed that there was a one year earlier -- because we had air sampling data a year earlier, so we notified DOE and said hey, we think it ought to be extended. But we really don't normally make it our business to go and re-establish the covered periods for no --

MR. ELLIOTT: The Department of Energy is responsible in this Act, in this law, for establishing the covered facilities list. And to repeat that effort is something that's not NIOSH's -- within NIOSH's purview, and the appropriated money for conducting our responsibilities are not really dedicated to go that -- to that extreme --

MR. BERONJA: Okay.

MR. ELLIOTT: -- so we have to rely on what we

see the Department of Energy has given us, unless we find something contrary to -- to what they've established.

MR. BERONJA: Oh, okay. Okay. And is there a general document that's provided by the Department of Energy with that covered period --

DR. NETON: Yes.

MR. BERONJA: -- to you all? Okay.

DR. NETON: There's a web site that you can visit that has a list of all covered facilities and the years.

MR. BERONJA: Okay. All right.

MR. ELLIOTT: There's a formal --

DR. NETON: They have a little --

MR. ELLIOTT: Yes, that's where you can find a formal listing of covered facilities and their designations.

MR. BERONJA: Okay.

MR. ELLIOTT: Department of Energy holds all the hard copy records behind the establishment of that covered facility designation.

MR. BERONJA: Uh-huh.

MR. ELLIOTT: And that can be requested under FOIA. We have in certain instances requested

copies of the contract language so that we understood what was -- what DOE was -- or AEC was contracting to have done, but in many -- many instances we don't -- don't pursue that unless it's necessary.

MR. BERONJA: And maybe one related issue that might be worth talking about right now that's not part of the site profile review is there were other facilities that have to some extent been covered in the site profile but are not covered in the SEC, and that's the Downey, Canoga and De Soto facilities. And --

MR. ELLIOTT: They're separate from Area Four.

MR. BERONJA: They're separate from Area Four, so if the petitioner strictly petitions for Area Four, then you wouldn't go out necessarily and include those other three facilities unless they specifically --

MR. ELLIOTT: A petition only deals with one facility.

MR. BERONJA: And -- okay.

MR. ELLIOTT: If a facility came in with all three facilities listed, we would counsel the petitioner that it would not qualify, as written, and they would have to -- if the

petitioner wanted to submit three petitions for the three facilities, they could do so.

MR. BERONJA: Uh-huh, but yet the site profile -- I don't know if site profiles normally cover more than one facility. In this case they have, by your definition of facility.

MR. ELLIOTT: They can.

MR. BERONJA: Uh-huh.

DR. NETON: It's just more of an efficiency measure. You know, if they did similar operations, we would lump them together into one.

MR. BERONJA: Okay.

DR. MAURO: That's -- that's good, because what you're saying is the site profile may take on a broader mandate and cover multiple facilities.

DR. NETON: TIB-6000's a good example of that.

DR. MAURO: Yeah, exactly, but -- but the -- but -- and there are issues that have certainly emerged from our review of that site profile, but you're saying they do not fall within the scope of the SEC petition issues that we -- that are --

DR. NETON: For that particular facility.

DR. MAURO: -- for that -- for the -- yeah, for

that -- that particular petition. Okay, that's good. That's good.

MR. BERONJA: Okay, we'll keep moving on. Is there anything else with that first issue?

MR. ELLIOTT: It's good to get this on the record.

MR. BERONJA: Right.

DR. MAURO: Right.

MR. MORRIS: You may cut to the chase on the last issue, too, because that deals with Area One --

MR. BERONJA: Right.

MR. MORRIS: -- which is not a covered facility.

MR. BERONJA: Right, that -- I think the last one is off the table, as far as I'm concerned but will -- that'll make the end of this very easy.

The second one is --

MR. ELLIOTT: So we've agreed that this first one is not an SEC issue?

MR. BERONJA: Right, yeah.

DR. MAURO: Yes, SC-- SC&A and NIOSH concur --

MR. BERONJA: Yeah.

DR. MAURO: -- at least in the context of this

conversation.

MR. ELLIOTT: And I know what you said earlier, Mike, but you know, I would ask whether or not you would consider this one to be closed once we change the typographical error in the site profile.

MR. GIBSON: But -- you know, we can close these things. I'm just saying that, you know, the petitioners haven't had the advantage --

MR. ELLIOTT: Yeah, I understand.

MR. GIBSON: -- of looking at this information and, you know, something like dates, I don't believe there's going to be an issue with that.

DR. NETON: I would tend to back Mike on that. I guess, you know, given that, you know, you only got these this morning, you might want to take a chance to read the language a little more carefully and -- and see if you agree with what our response is. And typically what happens in -- at least in the procedures group world -- is they would hold that finding in abeyance until the --

MR. ELLIOTT: Yes.

DR. NETON: -- finding was -- or until the change was made.

MS. DALY: This is Cecilia in Mr. Gallegly's office, and I -- I would also want to echo that. I -- until we get a chance to really study this, we would prefer that nothing be closed.

MR. GIBSON: Well, that's what we'll do.

DR. NETON: We are annotating this is not an SEC issue, though. Is that correct?

4.1-2

MR. BERONJA: Right. On the -- on the second issues, it -- this is much more of an observation than a finding. It's just that the -- the names used to reference the site are -- are not consistent. Sometimes it's a little bit confusing so I guess -- and -- and I don't know if there's really a need to even go back and fix these. I mean if the -- if these documents are ever redone and there's the ability to make the naming a little bit more consistent, I think it would be worthwhile, but --

MS. HUGHES: Yeah, I agree with you. It's -- it's kind of -- it gets confusing and it has to do with there -- there be different location sites that -- referred to by location and

there's different entities from a corporate standpoint, so that makes it --

MR. BERONJA: Right.

MS. HUGHES: -- confusing, but it should be reviewed -- or changed to make it consistent at the next review.

MR. BERONJA: Yeah, and I don't know, I'd leave this up to the workgroup and if they want to do anything. My feeling is -- I mean it -- if somebody just gets into it and looks at it, they can -- they can figure it out, but it is -- it is a little bit confusing, so I don't know if any additional discussion is needed on this particular item.

4.2-1

The -- the next one -- actually we move -- we really move from the introduction into the site description, as far as the issues, and that first issue, 4.2-1, is really on the sodium reactor experiment. And -- and the main thing here is that I don't think that there really was as much information presented in the site profile as there is information out in literature as far as potential exposures and everything else. And this incident happened,

you know, post-- the -- or the covered period, through '58. This all happened in 1959, so you'll see in the actual site profile review -- I pulled out a number of, you know, discussion items from some reference documents that did reviews of the incident, so I just don't think the site profile did this particular incident justice. And -- and it -- it -- potentially it -- you know, from -- from my perspective -- in a lot of this I'd have to say, you know, before this went in as my perspective, which -- I don't have the history that John and others do -- it's an SEC issue just because it does happen after the covered period. I don't know if, you know, we don't really know how many workers -- you know, if they were truly badged during this period or how well that is documented, so I think this is still -- you know, needs to be reviewed a little bit further.

MS. MUNN: The question probably is whether all of the -- or at least a significant portion of the information that's contained in the references needs to be brought forward into the document. That's the -- at least that appears

to be the soul of the finding there, the question of whether or not it's complete. It seemed to me that there were numerous references, but again it's a question of having to go somewhere outside the document to get those references. Am I reading that correctly, John?

DR. MAURO: Yes, but I'd like to add another dimension to that is -- correct, there's very often -- and by the way, it has been a matter of practice for NIOSH -- that is, incidents themselves are not ex-- developed in site profiles.

MS. MUNN: Right.

DR. MAURO: And -- and one of our comments has been probably a good idea to have a pointer in the site profile, yes, there have been incidents, here's a table, and there are places where those are thoroughly researched. Now I guess where we are on this right now is certainly there are incidents that there's a lot of work that was done separate from the -- the site profile. But I guess from the extent to which we've reviewed it, it looks like there was -- there may be some problems in terms of

is there sufficient data to identify the impacted individuals and reconstruct their doses, and this would be for a time period outside the cur-- the current '55/'58 period. So I would say yes, this would be an issue that is worthy of some discussion as to whether it's an SEC or not and --

MS. MUNN: Right, you --

DR. MAURO: -- only from the perspective --

MS. MUNN: -- you would agree, however, that the SRE event, like the similar event, inside the nuclear community is well-known, well-studied and well-documented.

DR. MAURO: And -- and the degree to which dose reconstructions can be done with sufficient accuracy as -- at this point in the process, SC&A has not explored.

MS. MUNN: Right.

MS. HUGHES: Okay. Well, I -- I agree that it -- it could be a little bit more detail in the -- the site profile. However, the site profile -- the -- the site description, pardon me, the site description actually tries to describe the incident and not go so much into the dose issue, which should probably be addressed in

the external or internal sections of the site profile, but what -- our current standpoint is that since workers were monitored in that time period, then it is feasible for those monitored workers to reconstruct occupational doses. However, there -- there are some technical reports that seem to -- there seems to be a discrepancy in releases of iodine-131 and some other volatile fission products and we're currently looking into that since it -- there -- there's -- does not seem to be an agreement what could have been released so we're still wanting to look at -- at this and see where -- if -- if there were potential exposures to workers on the site.

DR. NETON: I think we would agree that, you know, we need to do a little more work here and, you know, it would be okay with us if we leave it as a potential SEC issue at this point. We need to do a little more -- more homework. We're not saying it -- something we can't do, but it's something that needs to be fleshed out a little better for us to get a definitive response.

MR. BERONJA: Anything else on that one?

(No responses)

All right, then that sounds fair.

DR. BEHLING: Greg, this is Hans Behling, SC&A. I just want to make a comment here, and I think it follows the previous comment by -- by the person who questioned not just the documentation of the incident but look at the incident in context with what kind of bioassay programs were available. To what extent, for instance, did we have the ability to monitor for such volatile radionuclides such as the iodines, the sodium-24 that is very short-lived in the human body, and even the exposure -- external exposure to -- to noble gases. It really has to be looked at in context, not just with the documentation process of the accident itself, but the -- the issue of dose reconstruction relative to the types of bioassays that were conducted 1958 and '59 time frame.

MR. BERONJA: Yeah, and I think maybe the point that's being made is that even though this -- this issue is in the site description, it really carries over into the internal as well as the external sections as far as what

monitoring truly was done this period and was the monitoring complete enough to really be able to do the dose reconstruction.

DR. NETON: Hans, this is Jim. I agree with you there. We need to -- we need to study this in the -- in the context of the unique nature of the incident and -- and if we do have sufficient bioassay for the general workers, if not the incident workers, to -- to cover this.

MS. MUNN: Hans, this is Wanda. You said one thing that gave me a little pause. You would expect some significant sodium-24 exposures from this incident?

DR. BEHLING: Yeah, this was a sodium-cooled reactor --

MS. MUNN: And of course this is getting down into the granularity of the incident itself. Probably this is not the right place to discuss that. We'll discuss that later. Thank you.

DR. BEHLING: Well, just briefly, Wanda, there were 55,000 pounds of sodium coolant that were contaminated. And of course when you have sodium coolant that's subject to neutron flux, you have a lot of sodium-24 --

MS. MUNN: Yeah, I understand that.

DR. BEHLING: -- that may have potentially affected workers.

MS. MUNN: I understand that. It just was not -- the business of its being contaminated is not the same as its being available for a significant exposure.

DR. BEHLING: Right.

MS. MUNN: That's why I said significant. But that's -- as I said, that's a deeper question than we need to touch on here. I'm sorry I raised it. Thank you.

DR. NETON: Sodium-24 has a fairly short half life, does it not?

UNIDENTIFIED: Yes, it does.

DR. NETON: So the dosimetric consequences would be fairly small, but we do need to evaluate that and establish a bounding value.

MR. BERONJA: Anything else on that issue?

4.2-2

Going to the next one, the lack of information on the composition of workforce, this is a -- you know, this might be somewhere between an observation and a -- and a finding, but you know, there was really kind of no -- well, this gets back -- I don't think we have another

comment on this, but there -- the term "radiation worker" has been used in the site profile. I know as far as the definition of what is a radiation worker changed, you know, over the history of this particular facility. And you know, really maybe having this definition of -- of the different -- of the workers and how they were characterized I think would have been helpful in the site profile, which group was -- was monitored. Again, this -- this right now is in the site description, just as far as the types of workers, how they were classified. But then this flows over into who was monitored on the -- on the external/internal side, too.

MR. MORRIS: Radiation workers were defined as -- in their on-site procedures, their contemporary procedures, so it's not a gen-- generic thing that came out of regulation, as I understand, so...

MR. BERONJA: Uh-huh.

MS. MUNN: This one is not identified on our matrix as an SEC issue. It appears to me that it is.

DR. NETON: Well, I don't know that it is an

SEC issue in my mind, Wanda. I mean we typically do not go into this level of detail about the actual composition of the workforce in the site profile document itself as to, you know, the exact nature of the crafts and workers, who were monitored and who weren't monitored, and that sort of thing. I mean the site profile establishes all the relevant scientific data that we have, health physics monitoring data, to do dose reconstructions. And then when one is presented with a case, you have a worker who either has monitoring data or is not monitored, and then we have another procedure that sort of helps decide whether this worker was not monitored and should have been monitored based on different job classifications, et cetera -- and in fact, that's a fairly claimant-favorable document.

MS. MUNN: Yes, I've --

DR. NETON: I think this goes beyond what we would typically do for a site profile.

MR. BERONJA: Yeah, part of this -- you know, in -- in our procedures, as far as the site profile review, this is one thing that is recommended, you know, that we look for and

that was not there. Whether it's an SEC issue, I -- I guess indirectly you might say it is, but you know, we didn't think it really was.

DR. NETON: I suspect this was -- this was a fairly generic high level statement -- is going to show up somewhere else. I mean if we --

MR. BERONJA: Yeah -- oh, yeah, yeah --

DR. NETON: -- so you know, this statement's --

MR. BERONJA: -- yeah.

DR. NETON: -- going to be repeated somewhere else in a more specific --

MR. BERONJA: That's right, right. That's why it's not really a -- we don't think it's an SEC issue.

DR. NETON: Exactly. I mean I don't -- yeah.

MR. BERONJA: I -- I think it is covered in the -- you know, what it's more related to is covered later.

MS. MUNN: Right.

MR. GIBSON: But just so they keep track of this and it doesn't fall through the cracks of these other documents.

DR. NETON: Yeah.

MR. BERONJA: Right, I think we -- we --

DR. NETON: Keep it a site profile issue, but I

don't know that...

MR. MORRIS: I also should note that this -- this site profile was written in accordance with the procedure -- ORAU team procedure 0031, which has had the benefit of SC&A review and -- and closure of the findings on it. So thi-- this is a standard template and those questions that you've suggested to be answered are not specifically in the template for -- for a TBD.

MR. BERONJA: Yeah.

DR. MAURO: I -- I would agree that these concerns should emerge or not emerge when we get into the external/internal dosimetry, whether in -- really in -- what we're really saying is do we have a group of workers here who weren't monitored, should have been monitored, and the question is do we have coworker data that will allow us to reconstruct their doses. So I think that this is an overarching statement that is more introductory than it is of substance as it applies to the SEC issue, and -- and that'll come ba-- we'll come back and visit that as we move through the system.

MR. BERONJA: And John, the comment I'd make --

I don't have the history that everybody else does -- I think it's more of a consistency issue. I mean if this hasn't been done in most other site profile reviews, then it's probably not an issue.

DR. MAURO: I -- I'm glad -- no, but I'm glad you brought it up because we have not raised this issue in the past --

MR. BERONJA: Yeah.

DR. MAURO: -- but you're correct, it's something that we do identify as one of the steps in our review procedures.

MR. BERONJA: Right.

DR. MAURO: And we have addressed it when we get into the specifics, but we really never address it in an overarching way as part of the site description --

MR. BERONJA: Uh-huh.

DR. MAURO: -- and the health physics program description and -- and our understanding of -- quite frankly, maybe it'd be worth saying just a little bit more. When the stage is being set for -- here we have the site that -- all these different activities going on, a sense of -- in the -- in the beg-- in the front end of the

degree to which the radiation protection practices at the time, who -- what was the philosophy, was -- was just a sampling of the high end workers exp-- monitored so that you get an idea of what the high end exposure were; were all the workers that had a potential for exposures above ten percent of the limit monitored. Other words, it's -- in -- in the front end -- now I think I may have seen that in some of the write-ups in the front end but some not.

DR. NETON: My sense is that this is more often dealt with in the internal and external --

DR. MAURO: Sections of the --

DR. NETON: -- because honestly, they're -- they're very different, as we've found out in the past.

DR. MAURO: Yeah. Yeah.

DR. NETON: Who was monitored and why and for what, internally and externally, tend to be very different. And if it's going to be covered at all, I would suggest that it probably belongs more in the individual sections rather than the site description, but that's just my opinion.

MS. MUNN: Yeah, I think you're right, Jim. Now that we talk about it, I -- I think so. And I --

DR. NETON: And you're right, John --

MS. MUNN: -- have no memory of 31, so...

DR. NETON: But we've tried to make that case extensively, remember, during the Y-12 discussion --

MS. MUNN: Yeah.

DR. NETON: -- about who was monitored and why, should they have been monitored, they monitored everybody -- we got into some very detailed discussions.

MS. MUNN: Yes, we certainly did work that one well.

DR. BEHLING: John, this is Hans again -- and -- and Jim. That comment came from me, and just for -- for the sake of answering a couple of people's questions who say this is commonly done, yes, it is. If I review -- if I recall some of the other TBDs that I've looked at personally, usually there is some oversight in -- in terms of how many people were on site, how many people monitored, and it does give you a sense of were all people who were present on

site monitored. If so, it certainly satisfies a lot of curiosity and questions about who were potentially exposed -- exposed to radiation but were not monitored. And so that comment does come from me, and it reflects my understanding of other TBDs where -- where this data was in fact incorporated, and it struck me in viewing Santa Susana that there was very little data on that issue.

MR. BERONJA: Yeah, Hans, you don't see their response. Actually in NIOSH's response they have said that a clarification regarding the types of monitored workers will be added to the revised TBD. So it looks like you're going to --

DR. NETON: Yeah, we'll --

MR. BERONJA: -- get your --

DR. NETON: -- we'll put something in there, but I -- I don't -- again, I don't think necessarily that this is something that would indicate that it would keep us from doing dose reconstructions because, again, that's going to show up in the internal and external --

MR. BERONJA: Right.

DR. NETON: -- documents, whether or not we can

adequately bound doses for those types of exposure.

DR. BEHLING: Also let me ask you while I'm thinking about it because we're talking about the SEC and that's obviously confined to Area Four and -- and -- and was there any attempt to -- to rotate workers between Area Four and the other three facilities? Do we know if -- if workers were routinely asked to come in and out of -- of one of the area into the other as needed?

MR. MORRIS: Well, there -- there was no attempt to routinely rotate them, but there was no -- no prohibition from them moving and in fact they could have, depending on the time frame that they worked, in the earliest days of the facilities they could have moved from Downey to Area four, potentially, and -- or -- or back and forth, depending on the assignment that they caught.

DR. BEHLING: I know that, for instance, at Idaho we had people just being rotated throughout and -- and they will appear in one TBD and -- and then another, and so the question is -- and in my mind, do we have any

understanding of whether or not people were in fact rotated from -- from Area Four to other facilities.

MR. MORRIS: I'll try to answer it one more time. I don't think they intentionally rotated people.

DR. BEHLING: Oh, okay.

MR. MORRIS: But they did -- people did move between facilities.

DR. MAURO: Interesting juxtaposition then. So right now we have an SEC petition that's limited to Area Four, and by definition does not include these other -- De Soto, Canoga and there's one --

UNIDENTIFIED: Downey.

DR. MAURO: -- Downey. Now I guess from the point of view of being able to reconstruct the doses to workers in Area Four and answering the question related to the SEC petition, if there is an iss-- let me see if I can pose this question; I think you know where I'm headed. If there is an issue on the site profile that says there might have been some difficulty reconstructing internal doses for people that worked that facility -- okay? -- but they also

from time to time went back and forth, how does that play out in addressing the questions related to the SEC petition where you're limited to only Area Four? You see the -- you see the dilemma. Is there a dilemma?

DR. NETON: I don't know. I mean we would -- our inability -- if we identify a weakness or an inability to reconstruct doses at one of the other facilities, then we would have the option to initiate our own 83.14 petition which would -- essentially NIOSH could initiate a class.

DR. MAURO: But it wouldn't play -- it wouldn't play out in the current petition, which is limited to Area Four.

DR. NETON: No.

DR. MAURO: Okay.

MR. SCHOFIELD: Is it known whether there are records showing these people going from the different areas in and out of Area Four? Is that documented, by any chance, in personnel files?

MR. MORRIS: You mean at the -- at the real fine level of --

MR. SCHOFIELD: Yeah.

MR. MORRIS: -- he was there for this week and

not for that week? I don't think you'll find that. When -- for example, when I was working in the -- to look at the medical records, it was really obvious that sometimes people were at this facility and some people -- times people were at another facility, but it was all one employer so the records were intermingled. But I don't -- I don't recall any data that I saw that would have answered the question you just asked, Phil.

MR. BERONJA: There were -- there were people -- if you look at some of the dose reconstructions, there were people that worked at the other facilities and they went to Area Four. There's no -- there's no doubt about that. I'm not sure what the percentage of people were, but there's -- there's definitely a group of people that worked at the other facilities and went to Area Four.

MR. SCHOFIELD: Particularly I'm thinking of things like a lot of the crafts and stuff, they may have been located in one of the other areas but yet significantly were in the Area Four --

MR. MORRIS: Oh, these are -- these are fairly far separated facilities in terms of -- you

know, up -- up a narrow California canyon to get to Area Four, and way out on a reservation -- or you know, sort of on a residential street in an industrial area, so -- but they were -- they were far enough apart that you would not have had the same group of maintenance workers, you know, moving back and forth on a day to day basis, I don't think.

MS. MUNN: Well, aside from that, with research and development sites like this, you tend to develop a specialized workforce that works on a given project at any given time, because each one has such idiosyncracies that you don't often overlap unless you have a continuing set of -- of programs, and then they're not all going on at the same time. So research and development sites are a little different.

MR. GIBSON: That's -- that's generally true, Wanda, but depending on the workload and what projects there were, they would -- could potentially add additional employees for peak loads and stuff.

MS. MUNN: Well, there's always a possibility, but I thought we were talking about routine operations.

DR. NETON: But when we get employment verified by Department of Labor, does it not identify --
MS. HUGHES: Yes, it does.
DR. NETON: -- identify which facility they're actually claiming employment at?
MS. HUGHES: It -- it does, and it even -- I think the dose records or the employment records actually show even which areas the workers worked in for certain times. Say the worker worked maybe a year in Area One, but was transferred to Area Four, so we actually have that information for -- for the workers.
DR. NETON: So, you know, worst case scenario, if the Department of Labor has qualified this person worked at Area Four for four years and they may have rotated out and gone somewhere else, we would just reconstruct the dose as if they were in Area Four the entire time period.
MR. GIBSON: But on the other hand, if someone's employment is listed at one of the other facilities and they're a claimant and they -- they remember through their work history they were assigned to Area Four --
DR. NETON: They need to let Department of Labor know that.

MR. GIBSON: -- if they could -- if they could meet the 250-day notice, then they should be covered. Right?

MS. BEACH: Have there been worker interviews asking that question? SC&A, do you recall any or...

MR. BERONJA: I don't -- I don't.

DR. MAURO: Do we have that back yet? I don't --

MR. BERONJA: There was -- you know what, it was -- the worker interviews were just approved clean, so now I think what's happening is Kathy is sending them back to the workers to look at to see if everything looks okay. So I think we're pa-- we just finished -- within the last day or two have been cleared, so I ha-- I haven't looked at them until they were cleared, so...

4.2-3

Anything else on that issue? The next issue, the lack of sufficient detail to assess potential exposures to workers, I think -- actually I think -- a few of these next findings I think, Hans, were your comments that you made, and I don't -- I don't know if you

just want to give a -- a summary of this 4.2-3?

(No responses)

Hans, are you mute-- I think you might be muted.

DR. BEHLING: Yeah, I'm sorry, I -- you're right, I was muted. I'm trying to recall some of the things, but I think it also touches back on a number of things we've already discussed. I think we talked about dates, the -- the issue of names of facilities, the -- the type of -- the number of workers, the doses associa-- I think we've discussed some of the issues already that would have been identified under this 4.2-3. I think this -- that was a composite statement I've made and -- and it may have also made reference to the issue of the various incidences that we briefly discussed, such as the sodium reactor experiment accident of '59, et cetera. I'm not sure I -- I'm not really prepared or I'm not in a position really to comment anything in addition to what has already been said.

DR. MAURO: Hans, am I correct, thi-- we're still in the section --

MR. BERONJA: The site description.

DR. MAURO: -- the site description. Let's assu-- so everybody -- in a funny sort of way the site description section's almost setting the stage of -- of the broad-brush areas of development that we would have liked to have seen in the site description to -- but they really don't come to light in terms of how significant an SEC issue might or might not be till we get on to the next -- to the --

MR. BERONJA: Right.

DR. MAURO: -- to the internal section and the external section, so I -- this is almost like a preview. Yeah, I think we're going to have to talk about some of these things, but -- in specifics --

MR. BERONJA: Yeah, and --

DR. MAURO: -- when we get to those sections.

MR. BERONJA: -- I gue-- I guess the other comment I'd make is this is really broad, and I think we have some more specific comments. So whether this is an SEC issue per se may or may not be the case. You know, there -- I mean for instance, with the sodium reactor experiment, you know, and some of the other ones -- well, the sodium burn pit and some other ones we'll

talk about --

DR. NETON: Right.

MR. BERONJA: -- maybe those are more specifically issues rather than whether this is really an SEC issue. I mean I guess -- this is a much more broader one, probably covering more detailed ones we're going to talk about.

DR. NETON: It's hard to address a comment like -- you know, your document lacks sufficient clarity. I mean what do you do with that? I think it's better addressed in the context of specific examples --

MR. BERONJA: Right.

DR. NETON: -- later.

DR. MAURO: And -- right. I mean in our own defense, when we review these we sort of -- we go through each chapter and say okay, do we have anything to say about the -- the site description. And so we have some general statements.

DR. NETON: Could be better, yeah. I mean --

DR. MAURO: Maybe the real -- I mean perhaps we move through these pretty quickly and let's get to the heart of the matter, which is internal/external.

MR. BERONJA: Yeah.
DR. MAURO: That's where -- that's where we got -- that's where the action is.
MR. BERONJA: Yeah, I guess the next one, Hans, also -- on the incomplete list of --
MR. ELLIOTT: But before we leave --
MR. BERONJA: I'm sorry.
MR. ELLIOTT: Before we leave 4.2-3, NIOSH is saying here that we will update the TBD to provide additional detail in response to this -- this issue that you've raised.
DR. NETON: We agree it can be fleshed out to be better. Whether or not that's going to prevent us from doing sufficient accurate dose reconstructions --
DR. MAURO: I agree to that.
DR. NETON: -- is another issue.
DR. MAURO: And that will -- that will emerge later when we get into the substance of the internal and external chapters.
MS. HUGHES: I think this particular statement that we'd provide additional review, the first two, there was a finding -- part of the finding said there was references missing or reference to a particular incident that will be added.

That's actually the main point of this response of...

MR. KATZ: So are you wanting to track this as an SEC issue or -- or not and we'll stick with the specifics?

MR. ELLIOTT: NIOSH does not believe it to be an SEC issue.

MR. BERONJA: I would -- I would be tempted to pull it off as an SEC issue --

DR. MAURO: Yeah, I think -- I think that there are elements of this general statement that could become an SEC that will emerge later when we get --

DR. NETON: Right, we really get into the weeds.

MR. BERONJA: Yeah, I think the sodium reactor experiment and some of the others --

DR. MAURO: And I think --

MR. BERONJA: -- will remain, yeah.

DR. MAURO: And those come up again later.

MR. BERONJA: Right. Yeah.

MR. KATZ: So it's not.

MR. BERONJA: Not, yeah, let's -- let's take it off.

MS. MUNN: It would seem that it would be

relatively easy to close this one out quickly, although we're not talking about closures now, simply by indicating that it is covered -- or will be covered -- in --

DR. MAURO: Transfer it.

MS. MUNN: -- right, transfer it and get it out of there to -- to where it belongs, which is down in -- in internal/external.

MR. BERONJA: Anything else on this one? The next one I think, Hans, was also one of your fin-- the incomplete list of radionuclides?

4.2-4

DR. BEHLING: Yeah, and -- and again, I sort of went through the whole site profile, between the various TBDs, and I realized -- for instance, the issue of -- the radioiodines were not included, and of course those would -- would have potentially been radionuclides of -- of concern during the various reactor operations, inclusive of incidences. And so there were -- so I identified radioiodines 131, 33, 135, also other activation products such as magnesium-54 that I didn't see on the list. So my -- my statement there was that perhaps a review of the list of radionuclides needs to be

done and -- and perhaps some of these radionuclides, especially the short-lived radionuclides -- also I didn't see much of -- in the way of sodium-24. We've already briefly mentioned that as an issue with the sodium-cooled reactor. So there were a number of radionuclides that I felt should have been added to the list of potential radionuclides. And especially those that are short-lived and, given the limited bioassays that may have been conducted, may not have been incorporated into the urinalysis or other bioassays that were done early on. Obviously we -- we know that these radionuclides, such as the iodines, are extremely short-lived. In some cases not even a very, very -- a turn -- quick turnaround in a whole body count would reveal a short-lived radioiodine such as 133 and 135, so obviously these are issues that have to be looked at and perhaps default values have to be factored into.

MR. BERONJA: Yeah, Hans, and maybe for those on the -- on the phone -- you know, I guess NIOSH and -- is going to respond to this issue by looking at this and determining if there are

radionuclides that need to be added that are of concern, so...

Anything else on -- on this issue?

MR. KATZ: So this remains as an SEC issue?

DR. MAURO: Could -- let me --

MR. KATZ: Is that what you're saying?

(Whereupon, multiple participants spoke simultaneously.)

DR. MAURO: And remember, what -- what's happening right now is that we're making general statements in the introduction, so in a way -- I mean maybe we're -- what we're really saying is this really should be married with the details that come -- to come later and rolled up into one particular issue, namely -- this is almost like an introductory paragraph to the concern, and then the itemized specific isotopes, specific issues and -- and the internal dosimetry concerns emerge again later.

DR. NETON: It's really like we're being double-hit here --

DR. MAURO: You're being double-hit, that's what I was going to say --

DR. NETON: -- you know, two findings for one (unintelligible). When you roll these up and

there's 39 findings, at the end of the day there may be 18.

DR. MAURO: Exactly, and you know what? I think --

DR. NETON: I'm sensitive to that.

DR. MAURO: You know what? Maybe --

MR. BERONJA: I'll be aware of that next time around.

DR. MAURO: No, no, maybe there's something we could -- let us talk about this, what to do about this. Right now we're working from this and doing the best we can with it, we're actually sort of stumbling over -- is there -- is there something that would be desirable for us to collapse the listing as a result of the dialogue we're having right now --

DR. NETON: I think so.

DR. MAURO: -- collapse it so that it becomes a crisp issue one and a potential SEC issue one that emerged from this meeting.

DR. NETON: Yeah.

DR. MAURO: And so we'll take words like this and marry them with the later stuff, so all of a sudden instead of having -- like you said -- 30, we only have six -- or seven or eight, I

don't know.

MR. BERONJA: Yeah, but John, you're -- in my -- you're confusing a little bit the site profile review, which we're doing, versus the SEC -- I mean this -- this review is really a site profile review --

DR. MAURO: That's right, yeah.

MR. BERONJA: -- you know --

DR. MAURO: So we go --

MR. BERONJA: -- with ju-- with the just the notations of the SEC so --

DR. MAURO: Yeah, yeah, yeah, yeah.

MR. BERONJA: -- this document is not really meant to be an SEC --

DR. MAURO: Yeah, yeah, yeah.

MR. BERONJA: -- review document, so I mean the fact that we had findings on section two -- I mean I think they're worthy of -- I mean I apologize if there's more findings -- I didn't mean this is a worse document than 18 versus 35, but -- you know, but --

DR. NETON: Well, if you look at 4.2, the incomplete list of radionuclides, I just glanced back through the internal section and there's like five or six findings that

enumerate all those individual issues, and uranium and --

DR. MAURO: Well, good --

DR. NETON: -- exotic radionuclides and such.

DR. MAURO: -- so in a way what we're saying is this is a site -- right now we have a site profile issue, that is you could have --

DR. NETON: (Unintelligible) incomplete --

DR. MAURO: -- incomplete description, you could, you know -- and the answer is yeah, we probably can improve on that write-up, make it look a li-- you know, tell the story a little better, but it's not an SEC issue. It's -- it's more a site -- because -- it becomes an SEC issue later, so we're trying to do two things at the same time.

MR. BERONJA: No, I agree with what you just said. It's not necessarily an SEC issue in section two. It becomes that way in the later sec--

DR. MAURO: It becomes an SEC issue later on when we get into --

MR. BERONJA: Yeah.

DR. MAURO: So in -- so I guess if we keep in mind we're trying to do two things in parallel,

talk about the site profile and -- and also say something about whether or not it's an SEC issue, I think -- my sense is that right now, within the context of -- of the description, the chapter two --

MR. BERONJA: Yeah.

DR. MAURO: -- this is not an SEC issue --

MR. BERONJA: No, no, I --

DR. MAURO: -- it is a site profile issue.

MR. BERONJA: I believe it is a site profile issue, but take --

DR. MAURO: Right.

MR. BERONJA: -- it off as an SEC issue.

DR. MAURO: And it becom-- but later we'll determine whether we have an SEC issue or not.

UNIDENTIFIED: Maybe you can say that about every finding in chapter two.

DR. MAURO: I'm -- and I'm -- and I'm -- I have a sense that that's in fact the case.

MR. BERONJA: Right, yeah.

DR. MAURO: You know, until we get there, you know, and we'll get there.

DR. MAURO: Yeah.

DR. BEHLING: John, let me just add a couple of points here. Normally when I review a site

profile, I realize that -- for instance, in the case of the TBD two and TBD five, there is obviously a connection. But frequently they're written by two different site experts, and what I look for is consistency because sometimes I suspect they don't necessary talk to each other and -- and they write each -- their -- their section, TBD two, TBD five, and -- and not necessarily make sure that all of these statements are consistent between the two TBDs. And -- and I always look at TBD two in context with TBD five and six, because sometimes you realize there are deficiencies in one area that you wouldn't have recognized if you didn't read TBD two.

DR. NETON: But that's not the case here, I think. You're saying that --

MR. BERONJA: Well, I think the -- I think maybe Hans pointed -- I mean these are site profile issues that -- that should be called out, but I think we can focus on sec-- you know, five and six as --

DR. MAURO: I know they're there --

MR. BERONJA: -- under the SEC issues.

DR. MAURO: Other words, I know when we get to

five and six we're going to see this -- we're going to see these concerns. I know that these are going to be something -- substantive discussion as an SEC issue.

DR. NETON: And I have no doubt that this -- this site profile can be improved, and when we address five and six those'll roll up and -- and get captured in two, if we leave this finding as a site profile issue.

DR. MAURO: I'm -- I'm fine with that.

4.2-5; 4.2-6

MR. BERONJA: Then the next two, and -- and really the last two comments on section two are really again probably between observation and findings. This -- the 4.2-5 talks about the discrepancies in dates of operation. I think that just needs to be cleaned up, and I think NIOSH has said that they're going to clean that up. The same thing is true on the presentation of owners and operators. That just is -- that could use some cleaning up, and I think you've said you'll clean that up. So I think these are fairly -- neither of them are site profile issues, they're just kind of cleaning up the document, so -- I mean unless there's any --

any other discussion on either of those.

MS. HUGHES: Not really.

4.3-1

MR. BERONJA: Otherwi-- if there's not, we can move into section three, you know, on the -- on the -- let me just make sure I've got my notes here -- on the medical dose. And actually I think this -- this -- at least in my perspective, I -- I think this is probably one where I put down SEC issue in error. You know, unless Hans or John feels differently, I don't think that this is a -- an SEC issue at this point. But this is just insufficient guidance in TBD three to perform dose reconstructions, and again, I think -- Hans, this -- I think this was your comment here, maybe just with some specific examples that you provided on... Hans, are you on mute?

DR. BEHLING: Yeah -- no, I'm -- I'm trying to -- I have got three different documents, my initial write-up to you, your write-up, and now the matrix.

MR. BERONJA: Yeah.

DR. BEHLING: I'm trying to shuffle three different documents around to see what it is

that I had initially submitted to you. Yeah, I -- I think my comments -- and it may have been changed in wording. My original finding under the -- the issue of occupational medical dose essentially read as follows: (Reading) Current guidance requires subjective interpretation and makes unreasonable demands on a dose reconstructor. And I provided some statements to that effect where obviously some of the documents, the hard copy documents that are available, are -- are oftentimes very, very -- just cryptic, where you have to go back and understand what was actually stated on these hard copy documents for -- in behalf of a given worker and -- and I'm not sure to what extent that was -- those comments were incorporated in the original -- in -- in the TBD review that you submitted. I'm trying to quickly scan here to see what was stated, but that was basically my comments, is that -- and I quoted directly from -- from the original TBD three regarding, for instance, its confusion, and I read here the exact wording that came out of Section 3.7 of the TBD and -- and let me just quickly summarize what I was concerned about.

In Section 3.7 of the TBD the following statements occur: The records provided by D (sic) are likely to include adequate information to define the type, date and account of X-ray examinations that were administered to the claimant as a condition of employment. Use the assumptions regarding radiographic exposures frequency only for screening when specific claimant records are not available.

And then it continues: If confusion about the radiographic exposure record exists, consider requesting that the notes on the exterior of the envelopes containing the claimant's X-rays be transcribed and provided. These notes should give insight to the reason that the exposures were made. For example, pre-employment examination, routine surveillance, and diagnosis of injury.

What really came out of this is we're asking the dose reconstructor, who is obviously in possession of some hard copy data that involves occupational medical, to make some additional inquiries that may or may not be within his purview to do so. And I guess I'll wait for

Jim or Larry's comments to what extent that -- at this point can be done and at the level of a dose reconstruction.

DR. NETON: Well, I'll defer to our experts here who responded to this question.

MR. MORRIS: Do you want to try that, Elyse?

MS. THOMAS: Yes, and we put in our response that -- specifically referring to the best estimate cases, there's guidance in Procedure 61 about what X-- what dose to include for a best estimate case. And -- let me read, I think I put in a section here -- for a best estimate case, Procedure 61 says for actual records showing X-ray exposure, dose reconstructor is not to add dose for years where there is no X-ray record. Okay? And that is in contrast to a dose reconstruction where the dose reconstructor is trying to maximize the dose or overestimate the dose, where they would be -- the Energy employee would be assigned a dose from X-ray procedures whether or not those X-ray records appeared in the record. So it -- it really -- there's not I think as much subjectivity there as -- as you would think when you also include the guidance

in Procedure 61.

MR. MORRIS: I might add to that, you truncated your quote halfway through it. I don't think the guidance is as hard to follow as it's been characterized here. And in response we provided the whole paragraph so you can judge it on its own merits.

MR. BERONJA: And maybe we just need to go back and take a look at this. I think, Hans, you haven't seen the response, unfortunately. But maybe we can take a look at this and have -- you know.

DR. MAURO: My experience in reviewing a lot of the cases is usually heroic efforts are not made to get to the high level of resolution for X-ray exposures that you would like, especially if it's early years, given the paucity of some records. And what you usually resort to is OTIB -- I guess it was 6, it may have changed numbers now, the one written by Ron Catherine*, which is an excellent document. We've reviewed it thoroughly and does lay out a strategy for making assumptions regarding photofluoroscopy -- later-- pelvic X-rays, lateral versus anterior, posterior anterior -- what I'm

getting at is my experience is when we do have comments on a site profile on the medical section, it's for reasons that you are seeing here. It's almost like an effort to try to achieve a resolu-- level of resolution with the data that would be desirable if you can, but we -- but we suspect that that's going to be difficult to do. You're saying maybe not.

MR. MORRIS: I personally looked at 300 envelopes.

DR. MAURO: Okay.

MR. MORRIS: And I personally saw notes on every one of them that were five to seven words long, with the examination date. And if you wanted to do a best estimate, the data was there for that.

DR. MAURO: Was there. I'm not going to disagree with that. I -- I would suspect that. But what I would also say is that push comes to shove, you resort to Catherine's approach and you bound it.

MR. MORRIS: That's true.

DR. MAURO: So it's not an SEC issue, to my opinion.

MR. BERONJA: Uh-huh, right. Yeah. So I gue--

I guess, just from -- in summation on that, I think we agree it's not an SEC issue. We can go back and take a look at it and see if there's anything else, after Hans sees the response. Anything else from the workgroup on this one?

(No responses)

4.3-2

If not, the next one, 4.3-2, this is more of a -- kind of observation and probably me a little bit as an outside-- I think this was my comment -- that, you know, I'd looked at it and -- and I was looking at the units and I think I finally figured out from one of our other experts that really what was intended was these units should have been per examination, and I think NIOSH has agreed that the next time they're going to add this -- even though it's probably a given or people assume that this is the case, probably for health physicists doing this, but I think it would just make things easier if we had the full units or...

MR. ELLIOTT: Well, when -- when a site profile is rolled out or a Technical Basis Document is rolled out, the dose reconstructors that are

going to utilize that document are given some training.

MR. BERONJA: Uh-huh.

MR. ELLIOTT: And so this would have come up, I would have hoped, in that kind of a training session when they say what units are we dealing with here or, you know, what -- and certainly we should have taken note of that and maybe made a change of that, just --

MR. BERONJA: Right.

MR. ELLIOTT: -- just for your edification. That -- that training session does happen, and so it's not just issued and assumed that everybody will understand or --

MR. BERONJA: Uh-huh.

MR. ELLIOTT: -- ask the right question.

MR. BERONJA: Yeah. See, I missed the training.

MR. ELLIOTT: Sorry.

MR. BERONJA: You didn't invite me.

MR. ELLIOTT: Sorry.

DR. NETON: But nonetheless, I don't think we would disagree it's not -- it's not a bad idea to put in per examination.

MS. MUNN: As far as years later looking back

at this, it might be worthwhile to incorporate a comment -- a sentence, phrase in the NIOSH response that includes the fact that training occurs.

DR. NETON: That's a good point, Wanda.

MS. MUNN: Just that it's typically accustomed, but -- and training might go in there, clarify the whole thing.

MR. ELLIOTT: Well, and we also hope that the review process would catch an error made by a dose reconstructor misapplying the table.

MR. BERONJA: Uh-huh. Uh-huh. Uh-huh. Okay, anything else on -- on this one?

4.4-1; 4.4-2

The next one, as we move into -- actually --

UNIDENTIFIED: Environmental.

MR. BERONJA: -- move into environmental, I need to get both my things here 'cause I have comments in my own section. The improper use of surrogate data for environmental exposure -- I think actually -- you know, just as a -- a little bit of a clarification to everybody -- again, this is Greg Beronja -- I coordinated this -- this review, but Hans and Arjun Makhijani and then Dunstana all were

contributors in looking at different sections of this, and -- and actually I think we had a few people that kind of looked at general sections that had -- had this comment on the use of -- and this particular comment issue's 4.4-1 and 4.4-2 on this improper use of surrogate data for environmental exposure. And this was primarily related to trying to take some of the later years' data to apply to the earlier years' data when I think in most people's minds there were many more activities going on in the earlier years, so maybe that wasn't a fair way to -- to treat that, so I think that was the general comment there.

DR. MAURO: But let me make a clarifying.

MR. BERONJA: Sure.

DR. MAURO: The term "surrogate data" is -- has -- it's one of these hot button words --

MR. BERONJA: Yeah.

MR. ELLIOTT: Connotations.

MR. BERONJA: Yeah.

DR. MAURO: Connotations.

MR. BERONJA: Yeah.

DR. MAURO: Do not -- we do not mean its other site. Surrogate data -- typically when we use

it now, we are referring to data taken from one site and used for another site. That's not the concern here. The concern is using -- it is a form of surrogate, but it's within -- within the system. Other words, so the main concern is that -- and by the way, this is a recurring thing that we run into on many sites. Don't have data in the early years but you do have data in the later years, and somehow you try to use the data in the later years to apply to the earlier years, and we do have lots of problems with that, especially in this particular case.

DR. NETON: This is a back extrapolation.

DR. MAURO: This is a back extrapolation in the -- in the circumstance where the back extrapolation, from our review, may not really work very well.

DR. NETON: I think you've seen our response that we don't necessarily disagree that we need more -- to do more work there to demonstrate that that's appropriate.

MR. MORRIS: On the other hand, as it being an SEC issue, I don't think that there's any doubt that we can bound doses. The ambient dose is not going to be higher than the monitored

worker dose.

DR. MAURO: Let -- let's talk about that some more. Let's say we have a worker and -- and he's a -- he works outdoors. Okay? So -- and -- and he's not monitored, and you need to reconstruct his exposure and it's post-1958. Okay? Now, I would agree that a monitored worker who worked where -- in an area where there was potential for much higher exposures is real, and he would be -- it would be unlikely that he would have experienced doses as high as the workers that worked in the buildings and was -- were monitored. That's -- nevertheless, there's an obligation to reconstruct this man's dose and you're in the position where you have to somehow assign an ambient dose, environmental dose, to this person. Right now the plan is to use effluent monitoring data taken from later years and somehow extrapolate back to earlier years to assign him a dose. I would say that that's going to be a challenge, and I -- and I don't think you could use other da-- other worker data for monitored workers to this person because -- in other words, it wouldn't be a

plausible scenario. I think we should talk a little bit about this.

DR. NETON: Yeah, yeah, yeah, I --

DR. MAURO: You know where I'm going with this?

DR. NETON: Yeah.

DR. MAURO: You see, the pa-- Part 83 has words in it on plausible, and this is a very important point that you're going to see come up again and again in a lot of our reviews. Yes, you could place an upper bound on this fella that I just described and the way you describe, but that would not be plausible. That sce-- that exposure scenario would not be plausible for him.

DR. NETON: Think about what you're saying here now, John, though.

DR. MAURO: Yes.

DR. NETON: You can plausibly bound workers with huge exposures in the plant, yet you'd have to -- you can't bound workers who were --

DR. MAURO: But it's not plausible.

DR. NETON: -- and therefore those would be not sufficiently accurate and become SEC --

DR. MAURO: Yeah.

DR. NETON: -- even though --

DR. MAURO: Well, that's how I --
DR. NETON: -- even though by definition their exposures, by your own admission, are lower than --
DR. MAURO: Yeah.
DR. NETON: -- the workers' exposures?
DR. MAURO: Listen --
DR. NETON: That's the subject of a different debate, I think, but --
DR. MAURO: Well, but it -- and it comes to rea-- it comes to -- to ground here. Other words, right now -- I mean we're going to see this again and again, but it comes to ground here. The fact that you could say I have a worker and I know his exposure could not have been greater than this, and you coul-- and you could say that, but -- and the reason you're saying that is -- and you have good reason to say that. But then you -- then you say but okay, and how did you get that number, that -- and say well, I got it because I have a coworker model for workers that worked in this building where we know the exposures were much higher than he could have ever experienced 'cause he was outdoors -- working outdoors.

Now -- then I say oh, okay, there's no doubt from a -- that you have bound his exposures. Now -- then I -- but then I ask myself the question do you meet the criteria of plausibility that's laid out in Part 83. Now you've just defined a scenario that, in my mind, is not plausible.

MR. MORRIS: But isn't the point of this to decide whether somebody's got enough physical damage to be -- to have a plausible disease causation and not just whether or not you can invent a scenario?

DR. MAURO: Well, I mean you could -- see, what you're saying is I could assign any dose to this person, though. As long as you assi-- you -- see, if you're doing dose reconstruction and you give this guy some off-the-charts high number and you deny, I'm fine with it. It's when you grant that's the problem. You see whe-- and then -- and now as an SEC --

MR. MORRIS: I didn't understand what he just said.

DR. MAURO: Yeah --

MR. MORRIS: Could you say that sentence one more time?

DR. MAURO: Yeah, I was -- other words, if you -- if you're -- if you're processing the person and say listen, I'm going -- I'm -- I -- having a difficult time reconstructing his dose, but I know I could place an upper bound on it, and I'm going to put an unrealistically high upper bound, which is often done -- OTIB-4 was a perfect example of it -- but it was des-- it was done for the sole purpose of denial. That is, even though we've assigned all this dose to this person, because he had this particular type of cancer he doesn't get compensated. So there is nothing -- that -- that works fine. But then -- but that's in the realm of Part 82. When you move into the realm of Part 83, it's a different framework where there's an obligation to say can I cre-- do I understand this man's exposure scenario where I could come up with a plausible exposure scenario and place a plausible upper bound on his dose. Then you would meet the letter and intent of Part 83. But if the scenario that you're using to -- to assign the dose to that worker is not plausible for that worker, I think you've got an SEC issue, and I think you -- and I think that

that's what we might have right here. Did you -- did you follow? I mean --

DR. NETON: Well, no. I mean I --

DR. MAURO: I gue-- you see what I'm saying?

DR. NETON: I think right now all you've said is you question our back-extrapolation, the -- the accuracy of our back-extrapolation.

DR. MAURO: Right.

DR. NETON: And if we can go back and shore that up and show that it --

DR. MAURO: I agree.

DR. NETON: -- it's not some scientific -- has some scientific basis, then we're fine.

DR. MAURO: Right.

DR. NETON: I -- I reserve the other argument for another -- another working group. I mean --

DR. MAURO: Well, the -- see, I mean --

MR. ELLIOTT: The plausibility argument --

DR. MAURO: The plausibility argument.

MR. ELLIOTT: -- is another --

DR. MAURO: Yeah.

MR. ELLIOTT: -- you've got two arguments.

DR. NETON: Right now --

DR. MAURO: Yeah.

DR. NETON: -- I'd prefer to address the issue which says you don't believe our back-extrapolation method is scientifically defensible --

DR. MAURO: But I -- but I want to leave it --

DR. NETON: -- and we'll do that.

DR. MAURO: But I want to leave it as an SEC issue --

DR. NETON: I -- I --

DR. MAURO: -- for the reason I just gave.

DR. NETON: -- I'm okay with that. I'm okay with leaving it --

DR. MAURO: Okay.

DR. NETON: -- as an SEC issue for that purpose.

DR. MAURO: Okay.

DR. NETON: But again, I think that whole issue is another working group's --

DR. MAURO: And -- and -- okay.

DR. NETON: They're all wrapped together, I agree, but I don't -- I don't want to take that up in this discussion.

DR. MAURO: Okay, whatever -- I wasn't -- see, I didn't want to rule it out as a -- not an SEC issue.

DR. NETON: Okay.

DR. MAURO: For the reason I just gave.

DR. NETON: We'll reserve it as an SEC issue for now.

MR. BERONJA: I guess maybe for those on the -- on the phone, sometimes we're not -- we're assuming -- we're looking at the NIOSH response, but everybody else doesn't see them.

DR. NETON: Right.

MR. BERONJA: I don't know if you guys want to say what you're going to do related to this...

MS. HUGHES: Okay, since the -- the environmental approach of the site profile was issued, additional data capture has occurred which consists of about 400 additional documents, and this is currently under revision and -- the -- the approach that is taken, and it will be revised. It is currently under revision, so...

DR. NETON: We have a lot more information here to rely on that, and I think we can come up with a better -- defensible -- more defensible argument. I would argue that it's plausibly between -- somewhere between the occupational exposure in the plant and the fence line

exposure. It's somewhere in that -- in that.

MS. BEACH: And I want to make sure we're clear there was no surrogate data used for this. Correct?

MR. BERONJA: That's right, yes. Anything else? Anything else on that one?

MS. MUNN: Wanda. I was just going to comment Ted -- I think that was Ted -- brings up a very good point with respect to the NIOSH response. Even though I'm fortunate enough to have them now, perhaps as a matter of process in this particular meeting it might be a good idea, since most of the NIOSH responses are relatively brief, might be a wise idea for us to just read them before we discuss the item at great length.

4.4-3

MR. BERONJA: Okay. Let's see, the next one, development of breathing zone air concentration is technically not supported -- again, I think we had a few people that looked at this particular one, and I think maybe the -- the end result of this is we don't necessarily think the factor's bad. It just -- there was really no supporting information to -- to

support it. You know, I -- I guess I've seen workplace levels based on other criteria where they used the same factor, but there -- there was really no reference there.

DR. NETON: Just for my own edification, could -- Bob, you explain what we've done there, 'cause I -- I'm not clear --

MR. MORRIS: Yeah --

DR. NETON: -- what we've actually done.

MR. MORRIS: -- what happened was there was ambient air sample data for many years available.

DR. MAURO: The effluent.

MR. MORRIS: No, ambient --

MR. BERONJA: Ambient.

DR. MAURO: Oh, ambient.

MR. MORRIS: -- ambient air sample data at five --

DR. MAURO: Plant -- plant --

MR. MORRIS: -- at five locations in the Santa Susana Area Four for many years. The numbers were all indistinguishable from background. The author of the Technical Basis Document found stack effluent data on top of that for a number of years and, in an effort to be -- fill

in the miss-- any missing data and -- and try to put an upper bound on the dose on the intake rates, he then said here's our stack concentrations, and in many cases those were not different from ambient air, either. Then said we know we can bound this as a -- as a bounding approach by taking a factor of 100 discount on the average stack effluent and moving that to ground level and let -- have that be the intake rate. It really didn't create doses that were so high that you had to -- had to deal with them another -- any other way.

DR. NETON: These were ambient environmental doses that we're trying to establish on site.

MR. MORRIS: Ambient environmental intake rates for air -- for air that are trying to establish we have five points for many years that showed no difference from background.

DR. MAURO: Yeah, I would agree that the -- Hans, did you want to jump out on that?

DR. BEHLING: Yeah, I guess the -- the issue that also has to come into play here is the concern that this is nothing more than a conversion of air concentrations at the release

point that are reduced by a factor of 100 someplace in -- in -- in the environ. What it doesn't include obviously is the potential resuspension of contamination that has already been deposited on the ground for years of -- of -- of releases, so the 0.01 factor only takes into consideration this dilution effect from a release point to the air concentration someplace in the environs, but does not incorporate the issue of resuspension of contaminants that have been sitting there on the surface for years. That -- that's one of -- it may not be a very significant contribution, but it's just a comment that I included.

DR. MAURO: I -- I'd like to add a little more -- to roll the -- see, I saw this as containing three elements, this modeling. One is you have source term information. And as we mentioned before, the release rate, curies per second or the concentration in the effluent in picocuries per cubic meter --

MR. MORRIS: That's more likely what it is.

DR. MAURO: -- discharged to the -- being discharged. Now the first question is okay,

certainly for the time periods we do have that information, that -- that discharge from concentration and the isotopic mix. Applying .01 is not a bad -- I mean I'm very familiar with chi over Qs in calculations, and let me tell you, you'll put an upper bound on that. The dispersion is going to be much more than that because you know, even -- even close in.

DR. NETON: Close in.

DR. MAURO: Even close in. So certainly if you wanted to say I know what the concentration is, the average annual concentration of radionuclides are in the effluent from the stack in picocuries per cubic meter, and a list of isotopes, and I'm going to say no one -- then I'm going to multiply that by .01 and assign that to people that are out there, it's no doubt that's bounding.

Now -- so -- so I -- now here's -- here's the discussion. It's my understanding, though, that you don't have that data for earlier years, the effluents -- that is, the pico-- the -- what the isotopes were nor the picocur-- picocuries per cubic meter are, so we have a back-extrapolation problem that will be

addressed in those 400 pa-- so you -- that may go to -- that may be solved by that.

MR. MORRIS: Could be.

DR. MAURO: Right. The resuspension question. Certainly you're going to have an accumulation of radioactivity on soil. Depending on the half-life of the radionuclides, you could have quite a bit of accumulation or not. I mean that -- it's -- it wouldn't hurt to air that out a little bit in the report. I think that's tractable is coming to grips with that if you deal with the first one. Other words, once you get to the point where you know what your concentration mix is and the quantities being discharged, you certainly could place an upper bound on what might be on the ground and what might be the resuspension. So what you -- of course we may have some dis-- discussion on what resuspension factors to use, we've done that before, but that's not an SEC issue. The SEC issue is do those 400 books -- eight pages -- give you the information you need to go backward in time.

MR. MORRIS: And we don't know the answer to that.

DR. MAURO: And we don't -- you -- right.
DR. NETON: Yeah, see, that -- that argument's not -- that doesn't come out in the finding I'm looking at here. I guess -- and I'm looking at the original finding -- it basically just says it doesn't believe the 0.1 has been sufficiently --
DR. MAURO: Yeah, I'm real --
DR. NETON: -- answered.
DR. MAURO: -- I -- I tend to -- I -- I see this as one thing.
DR. NETON: Yeah, I can almost see these rolled into one finding.
DR. MAURO: Yeah, it's one --
MR. BERONJA: They could be. Uh-huh.
DR. MAURO: -- it's one story. But now let's talk a little bit about the .01. This is the first time that I've seen it used. I have no doubt that it's bounding, but in every other case, every site I've -- we've reviewed that I could recall, there's been 30 of them, you always the average annual chi over Q where you took joint frequency data and applied it, came up with a sector averaged or a center -- centerline chi over Q value. This is certainly

a shortcut, and it's certainly a bounding shortcut, and this brings us -- and you know, that's -- and I don't -- I guess I don't have -- I'll do -- I just was surprised to see you using that approach here. It's the first time I've seen it.

MR. MORRIS: I think the author looked at the data that were available and said, you know, whether we fine-tune it or not, it's still a small number.

DR. NETON: There just weren't -- weren't many stack releases to begin with --

MR. MORRIS: That's right.

DR. NETON: -- during that period, so -- okay.

DR. BEHLING: John, also just a comment. If you're thinking that 0.01 is a -- very definitely a (unintelligible) and bounding estimate, then it very well may be. Also this issue of the 0.01 reduction factor has to be used in context with the previous finding that says prior to '71 we don't have any data, but we do know that the amount of activity and operational activity that might have released much larger quantities earlier on for which time you don't have any data, you may have a --

a compensation effect here that says yes, by use of the 0.01 we are bounding a chi over Q value, but we're also perhaps compensating for higher releases that occurred earlier on for which we have no data. And so perhaps the two of them are connected and -- and -- and perhaps we can let go of both of them by using the 0.1 as a claimant-favorable default value that compensates for earlier releases that may have been higher than those that were monitored post-'71.

DR. MAURO: Yeah --

DR. NETON: I agree, Hans.

MS. MUNN: Just reading these findings and the responses, and having read some of the basic documents but not that thoroughly, there's a little confusion. Neither of these use the term that was just used in the discussion; i.e., resuspension. Resuspension of -- is there an inference that there's particulate emission here? What --

DR. NETON: Yes. Wanda, this is Jim. That -- that is covered in the original review. It got lost in the translation onto the matrix, is what I just noticed.

MS. MUNN: Okay.
DR. NETON: There's a sentence about resuspension in the -- in the actual site profile review.
MS. MUNN: That's such a hot button word that it seems to me if that's what we're going to be discussing in these findings somewhere, that ought to appear.
MR. MORRIS: And let me just refer to one more thing you should look at. In Section 4.5 of the site profile -- I'm quoting it now -- it says from 1959 to present ambient gross beta activity in air has been continuous -- has been measured continuously in five locations. From 1963 on gross alpha was -- activity was measured. And then it goes on to explain that none of these data were different from background. So --
MS. MUNN: Right.
MR. MORRIS: -- it's not that there's a shortage of data in general, it's a shortage of stack data that was complementing -- that this ambient measurement.
DR. NETON: Which would tend to indicate the resuspension might not be a problem if --

DR. MAURO: That's right, if it's --
DR. NETON: -- background levels --
DR. MAURO: -- been accumulating over the years, you would see more -- unlike the air concentrations where you -- you know, the back-extrapolation needs to be researched with -- what I'm hearing is that well, if there's going to be a resuspension problem, you're going to see it more as the years go on because you're accumulating stuff on the ground.
DR. NETON: Right.
DR. MAURO: I understand that, yes.
MR. GIBSON: We're done on that one. Before we move on I've had a couple of requests -- we'll go ahead and take our morning break now and --
MR. BERONJA: Or could we just maybe summar-- summarize that? I -- maybe for those on the phone in particular, I guess the response to both of them was -- to the first one was that NIOSH was going to review these 400 documents that they now have in possession to see if the surrogate stuff can be essentially -- rely on this other -- this other information. And then the latter one said that the basis for the factor will be described in the next revision.

DR. NETON: That's fine.
MR. BERONJA: So I think both of those have been addressed satisfactorily I think in our minds, so I guess we can go.
MR. GIBSON: We'll go ahead and take our break now. We'll be back at 11:45, 11:50.
MR. KATZ: Okay, I'm just going to put the line on mute.
(Whereupon, a recess was taken from 11:35 a.m. to 11:50 a.m.)
MR. KATZ: Are y'all ready to start up again? That's okay?
MR. GIBSON: Okay, we're back in session here. I believe we just finished up with 4.4.3 and ready to move on to 4.4.4.
MR. BERONJA: Okay.
MS. KLEA: This is Bonnie. Could I ask a question?
THE COURT REPORTER: Who?
MR. KATZ: Yes.
MS. KLEA: Do I have Dan (unintelligible) on the line?
MR. KATZ: Okay, it's Bonnie -- Bonnie.
MS. KLEA: Yes, I wanted to make a comment about the background levels. We are currently

in the community working on re-establishing background, so I don't know if that's an important point or not. Also we have 14 stories high of new information that has been released from the Boeing Company under a federal lawsuit, so there's a lot more than 40 new documents. We have like 14 stories high of documents. And if Dan was on the line, Dan's a 30-year activist on this (electronic interference), he -- he (electronic interference) on the background levels, so I don't know if he's on the line or not.

MR. KATZ: Bonnie --

MS. KLEA: That's all.

MR. KATZ: Okay, tha-- thank you, Bonnie. We'd -- I don't know if the person you're speaking of is on the line, either, but --

MS. KLEA: Okay. Anyway, we are redoing the background numbers so whatever that's going to mean, I don't know.

MR. KATZ: Thank you. So then you may be submitting more information. Is that what you're saying?

MS. KLEA: Well, we have -- like I say, we have on -- on the -- on the computer over at

Department of Toxic Substance new information and it's -- it's restricted so I -- we have to go into the office, but we have found lots of new data that's quite alarming on what happened in the early years, and I'm not sure quite, you know, how to get that to -- I guess I'd be working with Michael -- Michael Gibson on that.

MR. KATZ: Right.

MR. ELLIOTT: Well, Bonnie, this is Larry Elliott. If you have new information relevant to your petition --

MS. KLEA: Yes.

MR. ELLIOTT: -- I would suggest strongly that you need to submit it to NIOSH under your petition so that it can be evaluated by the Advisory Board, by NIOSH, by -- by all parties.

MS. KLEA: Okay. Also -- well, we have a lot of accident reports in this new information and I'm wondering if you're using accident reports other -- or the -- from other claimants. Are you comparing -- are you comparing claims from all the workers to look at the different accidents?

DR. NETON: We always look through the claim files for information to help us finish --

complete our dose reconstruction -- this is Jim Neton. I also have a question, though. I think -- I think a lot of the information that you're talking about might not be radiological information. It's my understanding there's some NEPA issues and discussions going on out there, and that would be more related to environmental contaminants and not specific to radiation.

MS. KLEA: Well, I can tell you we have progress reports from 1956 and they're talking about building a hole in the ground 15 by five feet next to a fault up at the Burrough Flats* area and directly dumping all of the radionuclide -- liquid waste, 1,000 gallons per week, directly into the ground.

DR. NETON: Okay. Well...

MR. KATZ: Well, Bonnie, cert-- certainly we'd welcome any information that you want to supplement your petition with.

MS. KLEA: Okay, should I --

MR. KATZ: We'd welcome --

MS. KLEA: -- it in?

MR. KATZ: -- that information.

MS. KLEA: Okay. Thank you.

MR. ELLIOTT: That's all you have to do, Bonnie, is mail it in to NIOSH and we'll make sure that it's entered into the petition that you filed and shown on the site research database for technical staff and SC&A and the Board to review.

MS. KLEA: Okay, thank you.

MR. KATZ: Thank you, Bonnie.

MR. GRIFFON: Ted and -- and Mike, this is Mark Griffon. I've -- I've been on the phone a little while listening in, but I just wanted to let you know that I was out here.

MR. KATZ: Right, we -- I knew you were out there, Mark.

MR. GRIFFON: Oh, okay.

MR. KATZ: Welcome, thanks.

MR. GRIFFON: You heard me, huh?

MR. KATZ: Yes.

MR. GRIFFON: Okay, thanks.

4.4-4

MR. BERONJA: Okay. So I think as Mike mentioned, the next issue we have is issue 4.4-4, which talks about the justification for assignment of external dose estimates is not provided. And again I think Hans, if -- if

you're ready or able to provide any additional background on this that you'd like to, I think this was one of your comments.

DR. BEHLING: Yeah. Unfortunately I'm looking at what I originally submitted and I do only make references to various sections in TBD four without at this point recalling what is -- what those sections really contained. But in -- in some way I would have to go back -- I will only -- from what I had written to you in my original write-up and that is there is really very little that is used to justify or -- the absence of external dose monitoring really provides little data for how these exposures may have been estimated prior to 1974. In other words, there is no technical support or reference for the assumptions that were stated for -- for these (unintelligible) dose from external radiation -- ambient external radiation. And -- and I guess I'm referring to Table 4-4 of the TBD with those values. It's a question of how were these values derived, what's the -- the bas-- technical basis for those assigned values.

DR. MAURO: It might be worth reading the NIOSH

response.

MS. HUGHES: Right. The offic-- well, the NIOSH response is that the basis for the assumptions are -- are currently being reviewed and they will be described in more detail in the next revision of the TBD. And this is something that's currently in progress.

MR. BERONJA: And again, this is -- is noted as an -- as an SEC issue, and I guess maybe depending on what you all find in -- in the next revision, this may or may not be, so we -- we kind of leave this open until we see the -- the next revision. Anything else on that issue?

4.4-5

The next one, and -- I think is actually one of mine that I -- is the use of potable water, and is not consistently presented in the site profile. And actually probably the wording on that is not very good. The real finding here is that the -- is that it does appear potable water was used at that area, you know, early on in the period and maybe throughout some different periods. The TBD states that potable water is not a source of occupational radiation

exposure. And in fact I think -- if I remember right, I think it even goes as far as stating that it wasn't even used, so I think there's just maybe -- I think the SEC petition was a little bit more correct as far as what it stated there, so I think there's just some additional information that needs to be presented as far as -- and I think that I -- I think probably within our actual site profile review there's some references that -- that we went through as far as some of the documents and -- and what they had to say.

MS. HUGHES: That is correct. The TBD stated that the potable water was not the source of occupational exposure, and to this -- as far as we know, there has not been any radioactive contamination been detected in any of those wells that were formerly used for drinking water supply. Now we do have some sampling wells on the site that have found levels of tritium, but these were not used for drinking water. However, in the evaluation report for the SEC we used this as an example. We're saying we could bound the dose by using levels that were found in these wells. So this is not

actually an -- an exposure scenario that did exist, but it -- it can be used to bound the dose.

MR. BERONJA: Yeah, and I think there was one -- I -- maybe it was even one of the dose reconstructions that was referenced -- may have been referenced in the site profile, I can't remember, or somewhere else -- where they did come up with a scenario as far as potential exposure to -- they made some assumptions where there were some radionuclides in the potable water and what the type of exposure would have been. So I think that -- that discussion as far as potable water just needs to be cleaned up in the -- in the site profile.

MR. KATZ: So Greg, this is not an SEC issue then, 'cause it's listed as one.

MR. BERONJA: This is -- you know, the likelihood of this being an SEC iss-- it probably really shouldn't be.

DR. MAURO: Well, if -- if it's bound-- other words, would the -- what I -- what I'm hearing is if it's determined that -- there's a possibility that some workers may have consumed water that might have contained levels from the

-- not the same level as the monitor wells. In other words, you're saying that we have monitor wells and we have drinking water wells.

MS. HUGHES: Well, the drinking water wells were in a different area of the site. They were in like Area One and Two, which is a little ways away, and I think they act as a different aquifer.

DR. MAURO: Okay, and there's -- and there's good reason to believe that -- that the monitor wells would have had much higher levels than (unintelligible) existed -- that's what I'm hearing the argument.

MS. HUGHES: What I understand is the monitoring wells were drilled near the -- what they expect to be the source, which is like a reactor building where you had concrete activation, if I'm not mistaken, and that -- that's what I think the source is, and they drilled some wells around to sample -- that's where they found a tritium plume, and it has since then migrated, but from what I've read, the -- the actual wells that have been -- have been used for drinking water historically are remote from that and acts as a different

aquifer, so...

MS. MUNN: John, some of the source material that I was looking at earlier had fairly extensive maps of Area Four where there were numerous sampling wells, but those were not the potable water. It would be I think unreasonable to assume that -- that someone was drinking water from the sample wells that were drilled rather than from the water supply that was made available, which was not from that area.

MR. BERONJA: Yeah, I think -- I think in this particular case the data out there, as far as being able to clearly say that there was no radiation in these wells, I'm not sure if that's really there. I think that probably just a further review of all that -- and I'm not sure if it's worth the equivalent of almost a white paper or something to try to compile as good a information as we have on this because, you know, there's not -- I don't know if I saw any maps that show the different aquifers or locations and everything else that summarized all this really nicely. There's just a lot of spotty information out there that you have to

kind of piece together, so I think the likelihood that there's any real exposure of concern is probably very low. But still it'd be nice to kind of clean up this issue.

MS. MUNN: Pull it all together.

MR. BERONJA: Right. Right.

MS. KLEA: This is Bonnie. Could I add a comment?

MR. KATZ: Yes, Bonnie.

MS. KLEA: Okay. We found that -- we found maps of the piping that piped water from Area Four into all the other areas, and it was used as reclaimed water to cool the rocket engines, and it was used for irrigation. So I would think it would be safe to say that whatever water was in Area Four from the -- the groundwater was distributed throughout the whole site.

MS. MUNN: But not as drinking water.

MS. KLEA: Well, it would -- it would have migrated into the aquifer, and I have information from the Health Department of Ventura County that that -- we were drinking groundwater well into the '80s and they knew it was contaminated.

MS. BEACH: So I heard mention of a white paper. Does NIOSH agree that they would --

DR. NETON: Well, not necessarily.

MS. BEACH: That's my question.

DR. NETON: I'm looking through the analysis on the SEC and I can't find it, but we've addressed that in the SEC evaluation report. I think Lara just indicated that in a worst-case upper bound one could assume that people drank the -- the tritium in the water that was taken from the monitoring wells, and that could be used to bound the exposures, so -- I mean I -- I don't know whether that merits a whole white paper or not, but -- I don't -- I -- I'd have to go back and actually -- I think the action item is we have to go back and look at what we've done in the evaluation report.

MS. HUGHES: I think what -- what you've stated is correct.

DR. NETON: This is correct, and I don't know if we did an example dose reconstruction to that effect --

MS. HUGHES: I believe we did.

DR. NETON: I think we may have, so what I'm suggesting is we may have already done this, to

some degree. And whether it's sufficient for -- for the working group to look at and use to close out the issue, I don't know yet. But let's -- let's -- we'll go back and look at what we've done in the evaluation report and -- and start from there.

MR. BERONJA: Yeah, I think what you're saying is true. I think there was at least one dose reconstruction that took a -- a step further and made some assumptions.

DR. NETON: Right.

MR. BERONJA: The SEC has more information than the site profile, and the site profile pretty much dismisses it, so --

DR. NETON: Right.

MR. BERONJA: -- we've got three levels -- two different levels of detail on this, so...

DR. NETON: It's sort of an artifact of how we're approaching this. We've got an SEC thing and we've got a site profile, but we'll go back and piece together what was in the evaluation report and use that, to the extent possible, to justify what we're doing here. And if it needs more to be fleshed out, then we'll be happy to do a white paper, but I don't know that we need

to do that at this point.

MR. BERONJA: Uh-huh. Anything else on that one?

4.4-6

The next one is a lack of -- this again gets back to some of the -- maybe the other areas or incidents -- it's a lack of information on the sodium burn pit and other areas of radiation sources. And -- and again I think in the particular case of the sodium burn pit, I think there is more information that probably could be pulled together to look at -- at exposures there. And in think in summary that's really the main point, but I haven't looked at the NIOSH response yet.

MS. HUGHES: Okay, let me just read the NIOSH response. Additional information on the burn pit will be included in the future revision of the TBD. However, the burn pit was an open, unconfined area that was not continuously occupied. In addition, significant radiological exposures resulting from worker activities in the vicinity of the sodium burn pits are unlikely because of the controls in place at this location. For example, workers

were required to remain a safe distance from the pits, including lined and unlined pits and ponds, because of the potentially violent reactions that could occur in the case of sodium or potassium making contact with water. After the discovery of the inadvertent contamination of the area, it was subject to periodic surveys and soil sampling until it was cleaned up. These surveys indicated low levels of contamination. The review of our claimant files indicates that workers who did work at the facility were indeed monitored. Those were typically fire-- firemen, actually.

DR. MAURO: And -- and positive bioassay results observed?

MS. HUGHES: I could -- I would have to go back and look. It -- it's hard to determine -- if you say -- a person makes the statement oh, he or she worked at the burn pit occasionally, and you look at the person's bioassay data, you cannot say for sure oh, this particular value is a result from this exposure there. Now these actions at the burn pit might have taken place maybe a couple of hours a week or so. It was not some -- somebody being exposed

continuously or even somebody working there for eight hours a day. That's unlikely because it's not -- there's not a building there. This is just a -- a little site -- a little area away from where they would react to sodium.

MS. MUNN: And the only thing that would have been there that would have been of radiological concern would have been contaminated sodium. It wouldn't have any of the normal isotopes of concern when you're -- you're dealing with fuel or anything of that sort. It -- it would only have been sodium and -- and Nac*, that's all that was there.

MS. HUGHES: Well, they did -- they did actually -- I think they did incinerate some -- maybe some oils or organic compounds, to a small extent. That was not the main purpose of this site, but we -- we can't entirely rule out that they didn't incinerate other things. It was not intended to incinerate or dispose of radio-- radioactive contamination.

MS. MUNN: Yes, that -- that was the point I was trying to make. Primarily you're looking at Nac and -- and sodium, and anything else would not have been likely contaminated -- or

radiologically contaminated.

DR. MAURO: Is there any guidance that's offered to the dose reconstructor on how to deal -- to reconstruct exposures to workers who might -- for example, you had mentioned that there might have been some folks that had bioassay samples --

MS. HUGHES: Yes.

DR. MAURO: -- that worked in the vicinity of this? Is there any guidance right now to explain -- okay, you have a claimant that might have had job responsibilities that put him in contact or in proximity to this activity. Is there any guidance on how do you reconstruct his doses?

MS. HUGHES: I do not think the guidance is any different from any other worker that would have been exposed to internal or external radioactive contamination that -- during operations at the sites and -- I don't know, anybody want to add anything?

MR. SCHOFIELD: Jim, I'd like to backtrack for a second. You addressed the tritium in the water wells in 7.4.1.3 --

DR. NETON: Okay, thank you.

MR. SCHOFIELD: -- of the evaluation.
DR. NETON: What was that again, Phil? I'm sorry, I --
MR. SCHOFIELD: 7.4.1.3.
DR. NETON: Thank you.
MR. ELLIOTT: Page 50 to 64.
DR. NETON: Yeah, I don't have -- thank you, Phil. I don't have anything to add to what Lara said about the burn pits other than we did commit to adding some additional information on the burn pit, so I think we're okay just leaving it where it is right now --
MR. BERONJA: Okay.
DR. NETON: -- and give us a chance to --
MR. GRIFFON: Can I -- this is Mark Griffon. Can I ask one question about the burn pit? Just to follow up on Wanda's statement, not likely that there was radiological contamination in these things. I've cleaned up some of these things and it might not have been -- you know, the -- the objective, but it certainly did happen. I wonder if there's any of these -- you talk about later surveys that were conducted in these areas, is any of that information available, and what -- and did they

find, you know, contamination and what radionuclides? I mean maybe that can be sort of what you add if you're going to revise it anyway.

MS. HUGHES: Yes, they actually did find some -- I think they found cesium and strontium -- strontium-90, if I'm not mistaken. And yes, the survey data is available, as are the decontamination reports, so there could be some additional detail that could be added.

MR. GRIFFON: And the only -- the only other follow-up as far as dose reconstruction, I think just to -- to -- I -- I understand you -- you would say probably if someone worked in the burn pit area, if they were on the appropriate bioassay monitoring program, then there's no -- no special treatment. Right? Is that kind of what you're saying? As long as you have bioassay data, if they're on the routine program and the right radionuclides are being measured, then there's no need to do any special assessment of the burn pit.

DR. NETON: I think that's a fair statement, yeah.

MR. GRIFFON: So -- so -- okay. That's fine.

MS. MUNN: And those -- the isotopes mentioned, which obviously didn't come out of the sodium, would clearly show up in bioassay. Right?

DR. NETON: Well, cesium would. Stronti-- depending -- if they measured for it, yes, these are detectable with standard bioassay techniques.

MR. GRIFFON: That's the real question. If someone mentions the burn pit in their CATI interview and these sort of radionuclides are not in their bioassay information, then you might have a -- a little bit of an issue, but --

DR. NETON: Right.

MR. GRIFFON: Yeah.

MS. KLEA: Can I add a comment? This is Bonnie.

MR. KATZ: Yes, Bonnie, go ahead.

MS. KLEA: I think the sodium burn pit's a bigger issue than -- than you're looking at because we were in an area of the Santa Ana winds that could blow from 50 to 100 miles per hour, and we also have evidence of a deceased worker who was ordered to dump and pump out the sodium burn pits over the hill, and of course

he's deceased now from cancer, but he gave his testimony before he died. I think the sodium burn pit is a huge issue and the firemen who may or may not have burned things in that pit were not covered under this program because they were considered as employees of Rocketdyne and they wore no protective clothes. So I know a lot of the families of the firemen and they all died of cancer and they were not covered under this program. Thank you.

MR. KATZ: Thank you, Bonnie.

MR. BERONJA: Anything else on that issue? Otherwise we'll look at NIOSH's response on that.

4.5-1

I think we now move into the internal side and actually I think we start off with -- looks like more of a -- much more general comment that internal monitoring was not complete or well-documented. Hans, I don't know if you're able to or want to elaborate any further on -- on this comment. I don't know -- this may I think partly come from you or --

DR. BEHLING: Yeah, this -- this does come from me, Greg, and -- and I guess to -- to really

get a flavor for it, I think you would almost have to go from the matrix to the original evaluation report that we submitted that contains a whole series -- in fact I'm looking at it now and it's kind of difficult to summarize all of the comments, but they were -- a large number of comments that were taken directly out of the TBD. And -- and I started out by quoting a statement that goes as follows: Early 1960s AI documents describe all of the elements of a comprehensive radiation safety program, including laboratory with bioassay capability. And that would suggest to the casual reader that all was well and there was a comprehensive program that would monitor workers for internal exposures by whatever bioassay tests were appropriate.

But then you go through the TBD and again I have taken statements that I describe both to the -- in the document that I submitted to you, Greg, and those documents were pretty much incorporated into your write-up, and you have to really go through each of those comments to understand what some of the limitations were with regard to the types of bioassays and the

time period during which those bioassays were used to monitor workers. And there were clearly some serious potential problems with understanding exactly what types of assays were used, what were these assays capable of under-- of identifying in terms of the radionuclides, in terms of -- of the MDA values that could be assigned when the responses were less than reportable. And one of the major problems you have to look at was the use of eight vendors that were used, and there's very little documentation that supports the type of methods used in the bioassay and the sensitivity of those assays, et cetera, et cetera. So it's hard to -- to really summarize all of the -- the statements that I included, but clearly -- especially for the early years when we talk about fission products from reactor operation, which are most capable of being monitored by whole body counting, that did not exist. In fact, whole body counts weren't really in vogue for -- for most years of the facility operation. So rather than trying to go through it, if -- for those people who have the -- the original write-up, you can sort of go through

them and convince yourself that bioassays were less than complete and -- and perhaps had severe limitations based on the type of bioassay that were used during various time periods and -- and the lack of documentation that would allow us to go back and sort of say what -- what were the laboratories using at the time for assessing internal exposures based on urinalysis as their principal source for worker monitoring.

MR. BERONJA: Yeah, those -- for those of you who don't have a -- the full site profile review, Hans actually had a -- there's two pages of excerpts that he has out of the TBD there kind of supporting his case, and probably much of this is also fleshed out in some of these later comments which provide more specifics. But maybe it's worthwhile just having NIOSH's response to -- to the comment.

MS. HUGHES: Okay. Yeah, I cannot address each -- each item that -- that was outlined here. A lot -- a lot of these statements are sort of picked out of the TBD and they need to be viewed in context. For this site, from all the information we have, not just the claimants'

bioassay, but we also have our site research database where we have numerous memos and communication between the site and bioassay vendors, we actually have a fairly good picture of what went on. And maybe some of these things need to be clarified in the TBD, but we do in fact know when bioassay was started, what -- what method was used with radiometric uranium determination. We have guidance what -- which workers were put on bioassay. Obviously the program was -- it -- it ramped up once it was started. It -- it was initially done in-house, and then they determined that they needed more bioassay capability and they solicited for vendor input. That's where this eight vendors comes from. Actually not all of these appear to have done bioassay, but they provided input offering their services to do bioassay to decide, so -- and in -- in these vendor communications, the vendors typically state what -- what procedures they are using for the analyte* to be determined and also what their detection level is. So there's actually quite -- quite a number of documents available that paint a pretty good picture that the

internal data -- in the early years it is more scarce than in the later years, once the -- the processes with the vendor -- like where samples went to the vendors were in place, so...

DR. BEHLING: Let me --

MR. ELLIOTT: And it's also the reason why we've -- we've recommended a class in the early years.

MS. HUGHES: Yeah, pre-- pre-1958 there is no bioassay data. Now in -- in 1958 the bioassay starts with uranium and mixed fission product determinations. Later on they bring in vendors who do -- who do the analyses instead of them being done on site.

DR. MAURO: In a -- in a classic SEC peti-- wherein -- I'm going to move a little bit through its relevance to SEC.

MS. HUGHES: Okay.

DR. MAURO: What I'm hearing is that, you know, your research has demonstrated that starting in '59 there's extensive bioassay data covering a broad range of radionuclides that might be of importance.

MS. HUGHES: It is extens-- well, the -- the number of monitored workers increased from --

DR. MAURO: Increased and -- and started to build.

MS. HUGHES: Yes, and start to build. Now we need to correlate this with the exposure potential of workers because as I understand the operations on the site, the number of employees increased as well. I think it peaked around the early '60s -- '62, '63 -- so you have to look at that as well. In 1959 the procedures were in place that samp-- samples were sent to vendors.

DR. MAURO: In a -- in a classic SEC review, as we have done in the past, it's at this point where we start to move on beyond what we normally do in a site profile review. And as I mentioned earlier when we first started this discussion, it's an important point of departure and a judgment that needs to be made by the workgroup. When we have a circumstance where our initial review of the documentation seems that they're dead or sparse, or perhaps not representative of all the workers or the conditions or isotopes, et cetera, but nevertheless NIOSH feels that no, we have a pretty robust database and it builds nicely

over time, at this point -- and this is always the choice of each workgroup; some workgroups want more of this than others -- we would normally go in and sample, by year, by worker category or facility type, see what comes out of the bioassay data that are there and the degree to which it meets some threshold, which is a judgment call of course, as to whether or not there's sufficient data to do -- either do the dose reconstruction for the worker themselves or to perhaps pool the data in a way that will allow you to construct a coworker model. We're -- I'm sorry, my phone should not be on. So in any event, I guess what I'm saying is there's really not much more we can say on that. Sorry.

MR. GRIFFON: I guess I would ask, before I -- I don't disagree with John's comment, but I would ask -- first, this is Mark Griffon -- whether this -- is this data available in sort of spreadsheet format, or -- or is it not available in that fashion right now? I guess since you're using individual records, it may not be in any kind of a -- a spreadsheet. I'm just curious of monitoring over time, which

radionuclides, how much, that sort of information. And if it was in a spreadsheet it'd be easy to kind of glance at it, at least initially, but it may be that you just -- you -- you're relying on individual records so you don't -- you di-- you didn't compile anything at this point. I don't know.

MS. HUGHES: Yeah, we only have -- well, we mostly have stuff that's a compilation that is based on the claims we have received, so it's not -- we cannot make a claim that it's complete.

DR. NETON: But don't we have the data that were used for the epi study?

MS. HUGHES: Yes.

DR. NETON: The Boice?

MS. HUGHES: Yes.

DR. NETON: See, there was a complete epi study, Mark, as you probably know --

MR. GRIFFON: Yes.

DR. NETON: -- (unintelligible) did a study and there's a large amount of -- of -- particularly uranium bioassay data available for this -- this population, and I thought we had an electronic copy of that database.

MS. HUGHES: It's in CEDR.
DR. NETON: It's in CEDR, okay. So it's a CEDR de-identified, but at least that could be used to look at the relative magnitude of the numbers over time. It would be de-identified, of course.
MR. GRIFFON: That might be useful if that can be put in the folder on the O drive.
DR. NETON: Yeah, I think --
MR. GRIFFON: Or -- or a location where it's at, that would be -- that would be useful to look at.
MS. BEACH: Is there also a list of the labs that were used somewhere that we can look at? 'Cause you -- you mentioned eight vendors.
MS. HUGHES: Yeah, that's in the TBD. However, I've looked at all the claimants' files and I -- there are certain labs that are -- seem to have provided the bulk, and some of them seem to only have provided some results from spiked samples that appear to be part of the solicitation process 'cause the site was, you know, picking and choosing the vendor they wanted to work with.
DR. NETON: But the list is in the site profile

--

MS. HUGHES: There's this list of eight. However, I think I have a -- I could provide that.

MR. MORRIS: There is on the O drive a data capture temporary files, the Santa Susana Field Lab bioassay data.

DR. MAURO: In terms of --

MR. MORRIS: It's in -- it's in a directory dated 3/13/2008, if that helps.

MR. GRIFFON: Yeah, I think I can find that. Thanks.

MR. MORRIS: You're welcome.

DR. MAURO: One of -- from perspective of one of our missions when we did our site profile review was to sort of look out as to where the areas might be that might require some investigation as to the -- whether or not there are time periods beyond 1958 that might be of concern. I guess I -- my -- in my reviewing the document, the -- or our work, it seems to me that this is an important -- namely the -- the point being that certainly NIOSH felt that '55 to '58 was weak in terms of internal and then something transitioned after that which

allowed you to feel more confident that you could do internal dose reconstruction. It is not self-evident from our review of the site profile that that in fact is the case. So I guess I'd like to point this out as if there is one particular area that I think is especially important, it's this one.

DR. NETON: I don't know what more we can do, because some of these findings are fairly -- fairly broad and we're not responding to specific issues here, so we -- we provided a generic response to generic findings, so I don't know what more we can do here other than --

DR. MAURO: Yeah, I would just like to point out that in going over the next series, you're going to see the internal dosimetry section --

DR. NETON: It's going -- going to get more --

DR. MAURO: -- they're -- they're --

DR. NETON: -- specific.

DR. MAURO: -- they're all a recurring theme of what about this isotope, what about that isotope, what about this activity, where's the coworker model -- other words it's all -- goes to a fundamental issue in that time period,

post-'58, there -- there does seem to be some question whether or not there's sufficient and adequate data to do dose reconstructions or do build a coworker model. It would have been idea if there was a need for a coworker model, and I suspect there is, that such a coworker model would have been either provided as an OTIB supplement to this document or be part of the site profile itself. But right now it's my understanding there is no coworker model, and that's essential.

DR. BEHLING: John, can I interrupt you for --

DR. MAURO: Sure, please.

DR. BEHLING: -- a second in -- in trying to answer your question again here, just as an example. I'm not trying to be comprehensive here, but in one of my comments I quoted something from page 20 of the TBD and it states in '67 the first chest counts, lung counts for uranium using medical assistance were performed at UCLA. The 186 keV gamma ray for the decay of U-235 was used to quantify the amount of EU in the lung and the calibration of this system was crude. Those are comments taken directly out of the TBD. Now again here is an issue.

How do we deal with chest counts which may have been a very, very critical internal exposure for people, especially if those -- if the form of uranium was highly insoluble and we're using a system that was never intended to be used for the chest count and was only focusing on the 186 keV photon which, in the presence of uranium that could have been enriched from anywhere from two percent to 93 percent, leaves a big open question mark as to how to interpret that data.

MS. HUGHES: I do believe the UCLA chest count only -- that was like the start-up of the whole body count process and it later on went to Helgeson, who did the more routine whole body count, I think after maybe 1966/'67 starting. But that's potentially one year you're talking about this -- this issue.

DR. BEHLING: Well, not quite. I mean we're talking about the beginning of chest counting in '67 and so if you're saying okay, skip that year, in '68 Helgeson took over, but what about '58 through '68? That's a ten-year time frame. If in fact exposures to uranium to various degrees of enrichment may have occurred during

that ten-year period, we don't have any data.

MS. HUGHES: Well, there was bioassay for -- urine sampling for radiometric uranium as well as fluorometric uranium. In many of the claimant files these were actually done concurrently from the same worker at the same day, so...

DR. BEHLING: Yeah, that -- that's another issue. In fact it's one of the other findings that follows later --

MS. HUGHES: Right.

DR. BEHLING: -- is the potential need to combine two -- two datapoints, fluorometric and radiometric, in order to really assess the issue because of the high variability of the degree of uranium enrichment.

MR. MORRIS: If you look in Section 5.5 of the site profile, that topic is uncertainty, and that issue is addressed. It says due to the calibration and other problems discussed above, uncertainty in the early UCLA lung count results for U-235 is estimated at plus or minus 200 percent at one sigma. I don't -- so I don't think that it's without -- that -- that it's -- it's not been addressed. I mean it --

it may not be an answer that is useful for really a fine-tuning adjustment on a dose, but in fact there is a number and a method to correct it, so...

MR. POTTER: This is Gene Potter. I just might mention that that UCLA count was a ad hoc thing for the powder room incident, which was not something that occurred at Area Four. It was at one of the other facilities.

MR. BERONJA: Do we leave this as kind of a broad finding right now and I assume that we're going to pick up a lot of this stuff in the later -- and this might be more of a general kind of broader SEC issue that we leave for right now and --

DR. NETON: Yeah, I agree this is an SEC issue at this point --

DR. MAURO: I mean I think it affects multiple issues, too.

DR. NETON: Again, this is double-dipping. I mean this is a general issue and it's going to have some specific ones underneath (unintelligible). I don't know what more we can do at this point.

MR. BERONJA: Yeah.

DR. NETON: We'll get down in the weeds here as we drill down through these findings, I suspect, about where the holes are -- where the -- where holes are as perceived by SC&A.

MR. BERONJA: Anything else on that particular one?

4.5-2

Hans, I think -- is this next one also -- I believe this next one's also yours. Did you want to elaborate on this -- on 4.5-2?

DR. BEHLING: Yes, there was a discussion about the solubility class of a uranium compound that is an alloy between uranium and aluminum, and in fact a separate study of that particular compound of uranium showed a very, very insoluble form. And I guess the -- the concern, based on everything else that we've talked about where -- where you have a potential for a class -- solubility class that goes beyond the -- the -- the slow or -- or class Y or the highly insoluble, this is a case where I believe we need to look at this and sort of say does this -- is this comparable to the super S plutonium issue that was discussed at other facilities. And based on what -- the

other information that was provided, it certainly looks to be that -- that that's a potential.

DR. NETON: Hans, I'm having trouble following you here 'cause it's not tracking with the finding that I'm looking at.

MR. BERONJA: Were you looking at issue 4.5-2, Hans?

DR. BEHLING: Let me see, and I guess I've got so many --

MR. BERONJA: Yeah, I apologize that -- this is tough to do over the phone.

DR. BEHLING: Yeah, okay --

DR. NETON: I just think this --

DR. BEHLING: Okay, you're right, you're right. I'm looking at something very differently.

MR. BERONJA: Yeah.

DR. MAURO: We'll get to that one, though. That's an important one, the one you're discussing.

DR. BEHLING: No, that doesn't seem to be mine, Greg.

MR. BERONJA: Okay, this may -- this may have very well been one of Dunstana's comments. So maybe it's worthwhile, at least in this case --

I don't know if NIOSH just wants to provide a general response, but the general comment, for those on the phone, is this -- this is the insufficient correlation between the bioassay data and the potential exposures to specific radionuclides.

MS. HUGHES: Okay, this elaborates on some -- some of the stuff we already discussed, that internal monitoring was initiated in 1955 to include workers who were handling unencapsulated radioactive material, such as workers in the fuel handling facility. Additional discussion regarding the exposure potential and correlation to the available monitoring procedures will be incorporated into the TBD. And in addition, additional activity fraction information can be -- can be used by using OTIB-54, which addresses reactor facilities. This document was not available at the time the TBD was published.

To address the second part of the finding, there was an issue regarding detection limits for 1975 to 1988 which are unavailable. These are actually listed in Table 5.5 of the document. Based on assumptions stated in

Section 5.3.1.4, if a value for a particular nuclide is not included, it would be logical for the dose reconstructor to assume that the detection limits were equal to those in the earlier period from 1967 to 1974, which are listed in Table 5.4, since generally detection capabilities stayed the same or improved with time.

Regarding the solubility issue that was raised in this finding, solubility is undetermined at many sites and dose reconstructors typically choose the solubility class that would be favorable to claimant.

MR. BERONJA: Okay. I guess in the -- in this particular one, you know, I think we'll just take a -- take a look at this response and -- and in thi-- this also -- this issue kind of is a little bit of a subset of the first one and very well, depending on kind of the other information that's provided, could be an SEC issue, too. So even though it's not noted as such here, I think we should probably put here and John --

DR. MAURO: Yeah, I agree. I think what we have here is that in -- in looking at the --

the bioassay program and -- as it's characterized, there seem to be a lot of radionuclides that might have been troublesome for some workers that the bioassay program may not have captured. I think that's the -- the essence of it. And your response is that well, we have the wherewithal to do that. For example, if you have gross beta gamma, you could go with OTIB-54 and I -- I'm familiar with OTIB-54 of course. That has its own constraints. It applies to specific classes of reactors. The degree to which its applicability to Santa Susana I guess we'd have to look at, whether or not tho-- those relationships -- the mix of radionuclides. And so what I'm getting at is that I -- I think -- and regarding 4.5-2 is that this might have been Dunstana's comment. Unfortunately -- Dunstana extends her apologies to everyone; she was planning on being here but something happened and she couldn't join us in this conference call, but I -- but I -- but I believe the point being that her review showed that the bioassay program, as characterized, could very well have missed certain

radionuclides. And this goes on to the next comment where she makes reference to Uranium-233, 234, so this -- the comment that we're looking at here on 4.5-2 has many similarities similar to 4.5-3. And I think that we -- I guess the obligation on our part is now to look at your response, and especially OTIB-54 as a -- as a solution when you have gross beta gamma measurements for -- and perhaps all the people were monitored. You know, the people who needed to be monitored had gross beta gamma, and perhaps OTIB-54 is the solution, but we'd have to look at that.

MS. MUNN: John, have we agreed that 4.5-2 is to be considered an SEC issue?

DR. MAURO: I think the answer is yes, until SC&A has a chance to -- to -- you know, to check out the issues that have been raised here as to the -- you know, the -- the response, does in fact the response satisfy the concern.

DR. NETON: We'd agree with that.

DR. MAURO: Yeah.

MR. BERONJA: Yeah, I think a lot of these things are -- are related. Is there anything else on 4.5-2?

4.5-3; 4.5-4

Otherwise John -- John's kind of already introduced to some extent 4.5-3, 4.5-4. We've already discussed a little bit of both of these, and maybe it's -- unless somebody has anything else on 4.5-3, which I think is a little bit of an outgrowth of 2, is maybe we talk about this coworker model and look at NIOSH's response of the --

DR. MAURO: Right.

MR. BERONJA: -- related to no worker -- no coworker model being developed.

MS. HUGHES: That's fine. Okay, am I -- am I on?

DR. NETON: Yeah.

MS. HUGHES: Okay. The internal coworker study has not been completed but it's currently under evaluation. Since this data is available based on the epidemiological study that has been done, data are available electronically and it's currently being assessed.

MR. BERONJA: This is that CEDR --

DR. NETON: Yes.

MR. BERONJA: -- database?

DR. NETON: May even do better than the CEDR

data, I don't know. We're working on (unintelligible).

MR. MORRIS: The problem, as I understand it, is that some of the information has been depersonalized as it got passed from Boeing to NIOSH, and some of that personalization of the data is necessary to make a good coworker study. So we're trying to evaluate what we've got access to, what we might have access to, and just exactly what we can do with it at this point.

DR. MAURO: What we usually like to do, in a general sense in terms of validating and verifying that you -- the data are -- have sufficient accuracy is once we get a sense of the different types of activities that took place and the isotopes of concern and the job categories, we -- we -- what we've been doing -- in fact, we almost have a procedure now that we've been following on the other sites -- is we -- we create a what I would call a str-- a strata. In fact, maybe this is important to point out to this workgroup. What we say is well, for this site, it looks like that if we -- if you -- you know, if you have a pau-- don't

have a complete dataset, or if you're trying to judge whether you have a complete dataset or whether you have enough data to build a coworker model, step one is to say okay, what are the strata of concern, and the strata meaning the years -- we'd like -- sometimes it's a group of years or it's individual years where I say well, from this time period to this time period, this is basically what's been going on at the site, and it may turn -- be different from year to year. And -- and these were the isotopes that represented the potentially important sources of exposure, and these are the different job categories. So it's almost like really -- time, activities and job categories are -- are the three strata. And then we say to ourselves well, for us -- for SC&A to convince itself that yeah, it looks like you've got a handle on this so that you can do the dose reconstruction, what we've been doing is first presenting to the workgroup these are the strata that we think are important. And then once it's agreed that yeah, those are the strata, then a sampling program where we go in and say well, let's

sample 20 cases from each strata, pull those cases and see what the data look like. And if -- and usually at that point the data speaks to everyone. That is, okay -- in fact, we're about to do that with Nevada Test Site and we will be doing that on Fernald. Basically we put on the table -- okay, here's a dataset by strata that -- that exists, and then it gets to the point where around the table we discuss whether or not it's -- it's of enough substance that either -- that you could say well, I think we could somehow con-- it's possible to construct a coworker model with that dataset, or -- or -- or there may be a problem. In the past, for example, where we did run into problems was with, for example, thorium. I believe that was Mallinckrodt. We got to the point where hmm, we've got lots of data but we're not quite sure how we're going to reconstruct the exposures to workers to thorium -- I think I'm representing that fairly -- so sometimes we find holes in the -- in the datasets that will create difficulties in reconstructing doses to certain classes of workers or certain time periods. So I guess

what I'm getting at is we're really at the -- what I see right now is we're beginning -- we're at the beginning of that process with regard to internal exposure. That is, the question that I think you folks are answering for yourself, and maybe have answered to your satisfaction -- certainly SC&A has not looked at -- is whether or not all these different radionuclides and the bioassay program does -- is -- and -- and the -- and the tools such as OTIB-54 collectively give you the resources, information capability, to re-- to reconstruct the doses to all categories of workers, or we may find there are certain time periods, certain activities, certain radionuclides that are going to be especially troublesome. And little by little we whittle it down and we get to the point where we're talking about what I would call a narrower group that may be the problematic area. I -- I say all this only because we've been through this many times before and we're actually getting very good at it in terms of -- as -- as a -- as a team where there's a process we go through to narrow down where the real issues lie. And right now I

think we're at the beginning of that process with regard to internal emitters post-1958.

MR. GIBSON: Okay. Let's -- we've moved into the lunch hour a little bit so this would probably be a good time to go ahead and break for lunch and we'll try to reconvene in an hour.

MR. KATZ: Okay, so then we're reconvening at quarter to --

MR. GIBSON: One.

MR. KATZ: -- one, yes -- quarter to 2:00. Quarter to 2:00. Okay, so I'm going to disconnect the phone and we'll set this back up again close to quarter to 2:00.

(Whereupon, a recess was taken from 12:43 p.m. to 1:44 p.m.)

MR. KATZ: This is the workgroup on Santa Susana resuming its meeting. I'd just like to check the Board members. Wanda, are you back on?

MS. MUNN: Yes, I am.

MR. KATZ: And Mark, how about you?

(No responses)

Mark Griffon?

(No responses)

Okay, Mark maybe not right now. And I wonder also, Bonnie, are you back with us?

MS. KLEA: Yes, who's this?

MR. KATZ: I'm sorry, this is Ted Katz. This is the Designated Federal Official with the workgroup.

MS. KLEA: Okay, Ted. I have a favor. I mentioned Dan Hirsch earlier. He said he would be on the line and he'd like to make a few comments in regards to what we're -- what he heard this morning, if you could let him do that.

MR. KATZ: Yes, that -- he's welcome to. Dan, are you on --

MR. HIRSCH: I'm here.

MR. KATZ: Sure.

MS. KLEA: You know, Dan's been a 30-- been appointed to oversee the -- the workgroup on the cleanup. He's been involved for 30 years and he knows more than anyone.

MR. HIRSCH: Thank you, Bonnie --

MS. KLEA: Dan, wait until everyone gets checked in.

MR. HIRSCH: Okay, very good.

MS. KLEA: Okay.

MR. KATZ: And Dan, it's okay, we're -- we're ready. You're -- you're welcome to -- Dan Hirsch, and can you spell your last name, please?

MR. HIRSCH: H-i-r-s-c-h.

MR. KATZ: H-i-r-s-c-h. Okay, thank you.

MR. HIRSCH: Well, let me just explain for a moment who I am and then make a couple of brief comments. I co-chair the Santa Susana Field Lab Advisory Panel, and have since the early 1990s. This is a panel that was established via the State legislature and through the State Department of Health Services, initially to oversee studies -- epidemiological studies of the workers at the Field Lab. We operated under funding by the Department of Energy initially and, when the worker study was completed, then funding by the State legislature to look at off-site effects as well. My co-chair during much of this period was David Michaels, who then left to become Assistant Secretary of Energy and is probably, more than anyone else, responsible for the establishment of this worker compensation program.

I also serve on the interagency workgroup that oversees the cleanup. I teach nuclear policy at the University of California Santa Cruz. When I was teaching at UCLA in the late '70s it was my students who uncovered the documents regarding the partial meltdown of the sodium reactor experiment, the SRE, at the site and made those public, so I've been involved for about 30 years.

I also worked with an organization called the Committee to Bridge the Gap, which has been involved in trying to get the epidemiological studies done and then working on the cleanup. So I know that I only heard a portion of your deliberations, and so I may have gotten a inadequate snapshot, but I was troubled by what I heard and I wanted to just be candid about that, in the hopes that that -- it may be useful. I was struck by what seemed to me to be a lack of understanding of the site, and also occasional indications of what may be perceived by the workers as bias.

I was surprised, for example, by the discussion about the sodium burn pit. Statements were made that only sodium was burned there, one

wouldn't expect fission products, one wouldn't expect anything from the fuel. But anyone who's followed the site knows that for decades the DOE contractor -- originally Atomics International, then Rocketdyne Division, which was then with Rockwell and then now Boeing -- violated the regulations and the law for decades and illegally burned radioactive and chemical waste in that burn pit. Sodium-contaminated reactor components were reacted in those pits and these were reactor components that had radioactivity and chemical contamination, and the contamination was so severe that the -- interim measures had to be undertaken repeatedly to try to clean up some of the contamination. The soil had to be removed, a so-called cap put on temporarily to -- because there continues to be contamination and the fractures in the bedrock that underlay that soil.

In the early to mid-1990s study done under EPA jurisdiction by McLaren Hart* found that the contamination not only existed at the burn pit, but had migrated off-site to the neighboring children's park, Brandeis Camp Institute --

strontium, cesium, plutonium and lots of chemicals. And the wells beneath the site are also contaminated.

This was an activity that was not supposed to occur and it appears that perhaps you -- some of your members are looking at what would have occurred if the regulations were complied with, but that would be a very faulty assumption for this facility because the rules were frequently violated.

I hope you all know that in the 1990s the company was convicted of felony environmental crimes for illegally disposing of hazardous materials at the Santa Susana Field Lab after an FBI raid that took away large volumes of documents. And the company had initially denied that they had done this, and then eventually had to concede that they had and pled guilty.

So if one is relying -- as it certainly seemed to me, listening to your earlier discussion -- that there is a repetition -- uncritical repetition of claims made by the company that is responsible for the worker overexposures in the first place, I think one would be making a

very fatal technical mistake. Here we have a situation where a company has a great vested interest in denying any past wrongdoing, and yet there is a voluminous history of that wrongdoing. And if one simply assumes that things were done right when the record clearly shows they weren't, you will not understand the worker exposures.

Secondly, there was some discussion regarding the -- the water pathway, the drinking water pathway. And I'm sure you're aware -- I hope you're aware -- that in fact the water that was used on site was contaminated and had to be discontinued. Now that was chemical contamination they claim they initially discovered, but for there to be any claim -- and they don't know how long people were drinking that contaminated water before they finally stopped using it. Now if you go in-- you know, into the bathrooms at the site they, you know, remind you that this is contaminated water and you should not be consuming it. But that of course wasn't the case during the early years in terms of any warning or restriction. The argument was made that yes, but the

monitoring wells are showing, quote/unquote, some contamination but hey, those are the monitoring wells and not the production wells, as though somehow that aquifer is nicely and hermetically sealed, one apart from the other. But the reality is that this is fractured bedrock and the migration pathways throughout are very poorly understood, but we know that the contamination migrates substantial distances. Something like a third or a quarter of the entire Santa Susana Field Lab is contaminated with TCE, and that contamination extends off the property. So one assumes that monitoring wells were only located where there was a likelihood of an immediate release, which is not the case, anyway; it's false. But even if one somehow presumed that, that misunderstands the nature of the migration of the contamination throughout the entire aquifer.

And there also were claims that this was a different aquifer. Again there's a misunderstanding here. There's one aquifer at depth underlying virtually the entire facility, then in some places there's also a curched*,

higher-level aquifer. Each of those statements just seem to be designed -- I wouldn't say designed, but seem to have the impact of saying hey, we don't have a problem here; we can ignore the water pathway.

As Bonnie pointed out, in addition, the contaminated water from Area Four -- and I'll give you an example. I was on the property a few weeks ago in the basement of one of the snap reactor buildings. There was water coming up through the floor of the reactor vault, and it was contaminated with all the radioactivity that was in that vault, and I asked what they had -- did with it. And they simply pumped that contaminated water into this huge SSFL-wide industrial process system, pumping the contaminated water from all the various places up to the tanks on top of the ridge, and those were then used to quench the rocket test (unintelligible) as Bonnie points out, and also was used to irrigate vegetation throughout the site. So you have a pathway whereby the contaminated water ends up becoming airborne in these massive plumes of steam from the rocket test stands spread everywhere, so you have all

sorts of inhalation and resuspension potential. Same thing with the irrigation. So I was very troubled by the implication that one could ignore the water pathway here.

An additional quick point, and I don't want to take too much of your time so I'll be -- I'll conclude in a moment, but the monitoring that was done of the groundwater was purposely skewed to try to remove any radioactivity before monitoring. In 1989 there was a famous memorandum by Atomics International/Rocketdyne saying that our water monitoring is showing us consistently way over MCLs for radioactivity -- gross alpha, gross beta -- and this is a problem for us so we have proposed to start filtering the water samples before measuring them, and we think this could help drive the measured values down. And indeed they started that practice and it resulted in a ten-fold reduction in the reported values, which they were very happy about, and have continued that practice to this day despite the US EPA roundly criticizing them, saying that they should measure what is on the filter as well as in the water that is filtered and -- and sum them.

And so the values that one is looking at in which one claims that you just have tritium, obviously you can't filter out tritium, it's HTO, so that is showing up. The other stuff is getting filtered out. Even so, they're still having numerous violations of the gross alpha and gross beta MCLs and the State Health Department pointed out that Boeing's claim that that's due to natural radioactivity doesn't seem to be well-founded because the elevated gross alpha and beta is showing up in Area Four and not showing up in Areas One, Two and Three, and it would be remarkable if the natural radioactivity just happened to be located in the nuclear area and not in the other areas. Last quick comment is I was very troubled by the reference to the Boice study, and I am puzzled why this enterprise would -- which has connections with NIOSH and was supposed to be reviewing in a neutral fashion the work that's been done -- would not be referring instead, or at least in addition to, the actual study that was done with DOE funding under an advisory committee established by the Department of Health Services of the State, co-chaired by

someone who became the Assistant Secretary of Energy for Environmental Safety and Health, having on it a representative of NIOSH, a study that was done by a very esteemed group at the UCLA School of Public Health, the results of which were published in the peer literature and which was -- found marked increase in death rates from certain key cancers associated with dose, monitonically rising with dose. And the Boice study of course was funded by and controlled by Boeing, established after the UCLA study and, frankly, designed to try to make those positive findings go away.

So I'm worried for people like Bonnie and the workers. They have been damaged once by our government, and it's extraordinarily important that the government not damage them again by a process that relies uncritically on claims by the entities that caused them the harm in the first place. And I'm puzzled that with all the work that my panel has done and that a number of other studies and efforts have been done, with vast amounts of records and data, have simply been left out of the loop and it appears that this review is relying largely on claims

by the company that have been, frankly, widely discredited.

So thank you. I -- I hope that my views are distorted by having caught you at a bad moment this morning and that it's not representative of your full deliberations, but what I did hear was troubling to me.

MS. KLEA: Thank you, Dan.

MR. KATZ: Thank you, Dan.

MS. MUNN: Professor, this is Wanda Munn. I'm a member of the Board. And in defense of the other people who are on this call and who are meeting in Cincinnati, I do have to point out to you that both of the comments and both of the discussions with which you were concerned were initiated by comments or statements made by me. And I'd like to reassure you that these are very early days with respect to this workgroup. We are just now going through this material for the very first time. And the questions that I posed and the statements that I made were based solely on the documentation which has been reviewed at this point by me personally, not by other members of the group. So please do not take the position that my

statements are representative of any of the other people who are involved in this activity. My statements were made based solely on the material that I personally have reviewed so far, and that in no way includes either of the documents that you recently mentioned, nor does it include all of the items that are available to us. So in defense of my -- my other colleagues and members of the Board and NIOSH and SC&A, I would like to reassure you that this -- these statements were mine and mine alone, and are not reflective of anything other than the documents that I have seen identified this. We have not even yet visited the site, which we hope to be able to do before too many weeks go by. And there are certainly numerous pieces of information, both from the workers and that are currently on file that I have not yet seen. So just wanted you to be aware of that.

MR. KATZ: Does -- does anyone in here want to say anything? I could point out a couple of things --

DR. NETON: I just -- this is Jim Neton. I just want to point out one misperception I

think that might have been generated during our discussion of the Boice study. We in no way intend to use any of the findings, interpretations or conclusions that came out of the Boice study. We merely expressed -- intend to use it because it's a convenient source of computerized bioassay data that's in existence at the site, and we would certainly go about and do our own in-- individual evaluation of the doses using that data. So we're not embracing anything about the results of the Boice study, but just using the bioassay data that -- that was collected.

MR. HIRSCH: Well, just to make a quick response there, of course the Morgenstern Ritz et al study also has a large body of data, and it would appear to me that one -- if one really is neutral -- would be trying to get the --

DR. NETON: Yeah.

MR. HIRSCH: -- data from that credible --

DR. NETON: This is the same data, we believe.

MR. HIRSCH: No, no, no, no.

DR. NETON: Urine samples that were collected on the workers, and you -- you have a certain set of data and that's what it is. You --

MR. HIRSCH: The analysis that was done by the Morgenstern group raised very serious questions about the bioassay data. And if you're not reviewing and understanding what their concerns were, you're missing I think an important piece of the --

DR. NETON: And we don't take the bioassay data at face value, either. We will review the data itself against detection limits and what was done. But it's really just the data we're looking at and we would draw our own conclusions from the data.

MR. KATZ: Dan, just -- just to point out a couple of other things before I let the group get back to it, just -- I -- we appreciate this input. I just would want to point out to you that the two issues, the burn pit and the water, were decided by the workgroup to be still live issues, so those -- neither of those were -- were put aside as non-issues, just to reassure you that -- that all of this consideration is still going on at this time.

MR. HIRSCH: I understand. My concern is the quality of the information that you're using to make those determinations. I understand you've

not made the final --

MR. KATZ: Right.

MR. HIRSCH: -- (unintelligible) yet, but I was puzzled -- it does sound like the information you're getting is from people who have not been to the site and who have only a very preliminary understanding of the underlying documentation. That's troubling for those of us who have given a good many years of our lives to understanding the site.

MR. KATZ: Thank you. I'd -- and just the last point is we certainly encourage all relevant information to be provided to NIOSH as we go through this process, and it can be a fairly extensive process and this is the normal way it goes. Information, new interpretations, et cetera, you know, are brought forward to NIOSH and the Board to consider as they go through this evaluation work. Thank you.

MS. KLEA: This is Bonnie. Could I bring up a point?

MR. KATZ: Yes, Bonnie.

MS. KLEA: Okay. Is Phil Rutherford still on the line from the Boeing Company?

(No responses)

No, maybe not. I would suggest that the Department of Labor or NIOSH either ask for or subpoena all the new data that has been released as a result of the federal lawsuit. I'm in no position to read everything and forward it, and I don't have the computer capability to even bring it into my computer.

MR. KATZ: Okay. Thank you, Bonnie.

MS. KLEA: Okay.

4.5-5

MR. GIBSON: Okay, we'll get back to the matrix here since we've got a little bit of limited time this afternoon, folks catching flights and stuff. I believe we left off on issue 4.5.5?

MR. BERONJA: That's right. And actually I think it's going to be true for at least the next three comments that we have are -- I think these are all issues that one of our specialists on the internal dosimetry side has -- has come up with in our specific comments. The first one deals with the -- when the bioassays were taken and kind of the -- a 48-hour delay in kind of the measurements, and the fact that they were viewed as chronic. And so that's the first thing. I think NIOSH has

provided us with a response of -- I don't know if you want to go -- go over that.

MS. HUGHES: Sure. The response is that it -- it -- the chronic intake is the default assumption for assessing intakes, and this assumption is applied by the dose reconstructor even if it's not explicitly required in the TBD. There is a Technical Information Bulletin that addresses correction factors to be applied in the event that there was a 48-hour delay between the end of intake and the collection of urine samples, so a correction can be made as necessary. And this document is in a draft state at the moment.

MR. BERONJA: And so then I take it of course that a site profile that would have been done when this one was done wouldn't use these correction factors that are now being developed or documented? Is --

MR. MORRIS: You meant a dose reconstruction.

MR. BERONJA: Pardon? I'm sorry?

MR. MORRIS: Did you mean to say dose reconstruction that was done?

MR. BERONJA: Oh, no, no, I mean the -- the -- when the site profile -- when this site profile

was prepared, I'm assuming that this OTIB that you're talking about right now and the associated correction factors, those correction factors would not have been applied actually to -- or -- or at least noted in the site profile. Is that right? I'm assuming -- I'm assuming this was done post-site profile.

MS. HUGHES: I'm not exactly sure what the status on this document is. Can --

MR. MORRIS: It's in draft right now.

MS. HUGHES: It's in draft.

DR. MAURO: This is an issue that has come up before and I'm glad to see that, you know, 'cause I know our folks, Joy-- Joyce and Dunstana both, looked very closely at this -- you know, collecting the urine samples on Monday and had a two-day -- we've done a number of example calculations. Sounds like you have an OTIB coming out that will adjust for that and so it's -- the way we see it is that this -- this is not -- certainly not an SEC issue --

MR. BERONJA: No, I --

DR. MAURO: -- it's just a matter of the correction factors. And I guess the day'll come when an OTIB comes out and whether or not

the -- the working group or procedure working group would like us to look at it.

DR. NETON: I guess I haven't quite -- do we know that these were Monday samples, or is this just sort of --

MR. MORRIS: It's a general practice.

MR. BERONJA: Yeah.

DR. NETON: It's a general practice at the site for Monday sampling? Of course that only makes a real difference for extremely soluble material -- we've been through this path before -- extremely soluble material which has lower dosimetric implications and --

DR. MAURO: Yep.

DR. NETON: -- yeah, so...

DR. MAURO: But I -- the -- I think the -- this sounds like this issue is well in hand and is not an SEC issue. And the degree to which, when that OTIB comes out, whether or not it's the working group here or the procedures working group, you'd like us to look at it. Is this going to be a generic OTIB for all sites or just for this site?

MR. MORRIS: I think across the sites.

DR. MAURO: Across the site, so this will be

something that the procedures workgroup might want to take on.

MR. ELLIOTT: Has it got a number yet?

MR. MORRIS: I don't know it, Larry.

MR. ELLIOTT: Thank you.

DR. BEHLING: Can I make a comment here on that very issue, because John -- as John has just mentioned -- this is Hans -- this has occurred before and I'm specifically looking back in time with regard to the Fernald facility where we did have obviously a whole series of bioassay, some that -- on the basis of past documents -- were told -- were done at the end of a -- of a shift, at the end of a -- the week, and then of course the two-day hiatus. And of course we are dealing with different types of uranium tha-- that went from highly soluble to insoluble, and the question I have with regard to this new OTIB that is being developed, will that also turn into a PER, which is -- in my estimation, it should.

DR. NETON: If the conclusion of the OTIB is that we need to go back and redo some of these calculations, yeah, it would. But I don't know if that's the case just yet. But you're right,

it would become a PER if (unintelligible) --

MR. ELLIOTT: Any time we make a change that increases the dose estimate -- potentially increases the dose estimate, we would enact a PER, yes, Hans.

MS. MUNN: This is Wanda. Do we have a feel for when that OTIB is likely to be on the table?

MR. ELLIOTT: I don't -- we don't.

MS. MUNN: Okay, thank you.

MR. ELLIOTT: We don't.

DR. NETON: We can look into that and -- and get back to the working group the -- the status of that.

MS. MUNN: Well, you can understand that makes me nervous. Just want to know when it's coming down the pike for procedures.

DR. NETON: I understand.

MR. ELLIOTT: That's why I asked for the number. At least we could use that to help track the current status of the document.

MS. MUNN: Right.

MR. ELLIOTT: But we'll figure this out, Wanda, and get back to the working group.

MS. MUNN: Thank you.

MS. BRACKETT: This is Liz Brackett with the ORAU team. The number of that OTIB is 68.
MR. ELLIOTT: Thanks, Liz, and do you know where -- what its current status -- is it in review or is it in development?
MS. BRACKETT: It's with OCAS, actually.
MR. ELLIOTT: Aha, there we go, there's the bottleneck. We'll look into where 68's at.
MR. BERONJA: Maybe -- like John has said, maybe this is well in hand. I don't know from a procedures perspective to what extent that these things get -- you know, training is done and people become aware of these OTIBs and everything else so that even a site profile might say one thing if there's -- you know, these things are supplemented and -- how does that --
DR. NETON: I think this should --
MR. BERONJA: -- how does that work?
DR. NETON: -- I think this should remain on the list as a site profile issue --
MR. BERONJA: Right.
DR. NETON: -- and follow it through to its conclusion, and it may be one of these issues that's transferred to the procedures working

group to evaluate for -- for finalization. I -- I agree with John, though, it's not an SEC issue. It's a matter of how -- it's the relative magnitude of the dose versus, you know, can we -- can we put a number on the dose.

MR. BERONJA: Anything else on that one?

(No responses)

4.5-6

If not, we'll move on to -6 here, which talks about inconsistencies between MDA values described in the text and the ones reported in Table 5.4 of TBD five. And again I apologize, I was hoping Dunstana would be available for the call so I didn't note when some of these findings were done. Some of these internal findings were done by Dunstana versus Hans. Hans, had you -- I -- I think that -- my memory -- I don't know who did this. My memory doesn't serve me well on this one. Is this -- is this one of yours or is this one of Dunstana's, do you know?

DR. BEHLING: It's a combination, Greg. I think in -- in my original finding that I submitted to you it was listed as 5-3, and --

and what I did there was I looked at some of the TBD values in Table 5-3 and others, and -- and I had similar comments. But I think the way you wrote it up in the specific document that -- where it's finding 4.5-6, it turns out to be a hybrid between my comments and Dunstana's comments.

MR. BERONJA: Uh-huh. And this might be more -- my understanding -- this might just be kind of more of an administrative thing between -- getting things consistent between the text and the table?

DR. BEHLING: Yes.

MR. BERONJA: Maybe -- NIOSH I guess is (unintelligible).

DR. NETON: I think you -- our response basically says we're committed to going back and cleaning that up.

MR. BERONJA: Okay.

DR. NETON: We don't dispute the finding.

4.5-7

MR. BERONJA: Okay. Unless there's anything else on that one, we'll keep moving on. I think we've got -- clarification of the MDA related to testing methodology. And I think,

Hans, you -- I think this may -- I think it may have again been made by both you and Dunstana. Do you want to --

DR. BEHLING: Yeah. Yeah, I can briefly talk about it. I think in my write-up, and I'm trying to see how closely your write-up matched what I had, but when -- when I look at, for instance, some of the data that were reported, they -- they acknowledge the fact some of the reported values are erroneously -- or they're identified as typographical errors. And -- and I had a fairly lengthy write-up in -- in my section finding 5-4, and I'm trying to see how closely you may have paralleled that in your write-up. I'm trying to get a feel for it, but -- oh, I -- no, I -- I think -- I think what I ended up -- that -- my write-up turned out to be 4.5-12, so --

MR. BERONJA: Right, right, yes.

DR. BEHLING: -- on the (unintelligible) coming.

MR. BERONJA: That's right, yeah, yeah, I thought you were talking about a different one. And maybe for the time being it's better for us just to go to the NIOSH response, then we can

look at that compared to what's been stated here.

DR. NETON: I'm looking at the response and I'm not sure -- I -- I think the -- the better explanation here is that if -- if we want to put the MDA for enriched uranium using a fluorometric method, so be it -- I mean that's -- that's a simple thing to do -- in case that the -- that was the only method available. I don't know why we sort of elaborated here now, I'm confused.

DR. MAURO: Let me ask a question. So if -- if you have a situation where you have a worker where let's say all you have is fluorometric analysis, and there's some question re-- regarding whether he was working with unenriched or highly enriched uranium, what do you do?

DR. NETON: Yeah, well, our response here -- basically I -- it says that we would -- we would have selected the right method, given the enrichment. If that didn't happen, though, you could rely on, as suggested in your finding, on using the fluorometric technique and assuming what the detection limits for enriched uranium

would be based on the -- a mass analysis, which would give you a huge MDA, I mean it would be massive, because --

DR. MAURO: Would you rely on process knowledge?

DR. NETON: Yeah, I think you'd have to go back and rely on process knowledge and figure out what the potential exposure scenario may have been, because I -- if you start doing very highly enriched uranium based on mass, you're going to end up with some pretty high numbers, so...

DR. MAURO: I -- I answered the question that way 'cause I'm not sure whether this would be -- if there's some ambiguity regarding how you would process such a case, and then -- you know, and -- I mean I'm asking myself do I see this as a -- an SEC issue. Certainly what you just described, yeah, you could bound it, but it would be a bounding technique that would be perhaps inappropriate, to the extreme that where you would go to if you assume it's 93 percent enriched. I'm just not sure, you know, how you would deal with this issue. If there is a tractable way to deal with this issue,

then it's not an SEC issue. But right now if you're not really clear on that, you know, it's hard to let it go.

DR. NETON: I mean I see in our response as well we talk about lung counts being available in this time frame when they were doing (unintelligible). You know, it would be a sort of flow path type of analysis where you look at the process, you look at any available lung counting data, you look at (unintelligible) analysis that was done, procedures that were in place -- or the analysis, depending on the type of work a person was performing, there are a number of ways one would go. In my opinion it'd be unlikely you'd end up at the point where you'd have to say --

DR. MAURO: (Unintelligible)

DR. NETON: -- they took a fluorometric sample on a 93 percent enriched uranium (unintelligible) -- it just doesn't seem likely (unintelligible). But outside of that, I don't know where else we'd go.

MR. BERONJA: So with this particular one -- I mean are you comfortable with the response here, do -- do you --

DR. NETON: (Unintelligible)
MR. BERONJA: I mean if you're comfortable with the response, I guess what I would propose is that we just take this back --
DR. MAURO: Bring it back --
MR. BERONJA: -- bring it back.
DR. NETON: Yeah, I'm uncomfortable with what we have here, and you know, maybe this is going to be one of those prove a negative issues, like you know, how can we prove that someone who was exposed to enriched uranium didn't get the right analysis. I mean -- I don't know, I almost have to have some evidence that it -- that there was a -- a distinct possibility that people working with enriched uranium had fluorometric analyses, which --
MR. BERONJA: This might be something that --
DR. NETON: -- seem unlikely to me.
DR. MAURO: By the way -- I mean if tha-- if -- in effect, you're saying that on a case by case basis there's a dataset available for that worker that would allow you to navigate your way through this problem, and that would be the kind of thing we would do during the data evaluation --

DR. NETON: Right.

DR. MAURO: -- process, if there turns out there really is not -- that is, that there are workers --

DR. NETON: Right.

DR. MAURO: -- I mean in effect --

DR. NETON: Sure.

DR. MAURO: -- if you looking at a dataset, you say okay, do we have a -- any workers out there who have fluorometric analysis done, that was the way in which they monitored the urine, but we know they worked with highly enriched uranium. Then you're in a -- you sa-- a situation that you don't want to be in. Now we -- we may find out that that situation never arises. That is, whenever a person is working with enriched -- highly enriched uranium, you don't just do fluorometric analysis, you do al-- gross alpha count and -- and then it becomes a tractable problem. So maybe the an-- the solution is when we get into that stage we could verify that we do have a way to navigate your way through problems like this.

DR. NETON: Well --

DR. BEHLING: Can -- can I make a comment here?

And I guess in my write-up, which didn't find its way into the final write-up that was submitted to NIOSH -- but in the early years, if I can again transpose my concern here to Fernald, was the concern in the early years regard to uranium more of a chemical toxicity issue or a radiochemical issue? And -- and that would certainly have -- if -- I would not have any problem if the bioassays were confined to gross alpha because that would certainly obviate the need to concern yourself with the degree of enrichment. The issue of how much enrichment was involved is really limited to those instances where the bioassay is confined to fluorometric methods. And -- and in the early years perhaps the issue of concern was mostly driven by chemical toxicity, which would potentially leave the door wide open in assuming that radiochemical analysis was not done. And I guess unless we do an analysis of people's bioassays, we will not have the answer to that question.

DR. NETON: I guess I'm confused by what you're saying, Hans. I mean if -- chemical toxicity was a concern for natural uranium, and what

you're suggesting, though, is that they would have used -- they would have been concerned about chemical toxicity for enriched uranium and therefore --

DR. BEHLING: Chemical toxicity for uranium, regardless of enrichment.

DR. NETON: Oh.

DR. BEHLING: If you don't have any radiochemical analysis, you don't really know what to do with micrograms per -- per unit volume of urine.

DR. NETON: And it doesn't matter what the enrichment is. It's a chem-- chemical toxicity is driven by mass of uranium. Right?

DR. BEHLING: I know that. I'm -- that's exactly the point. If in fact you're con-- you're concerned mostly about chemical toxicity, which would mean you would assess the urine by way of fluorometric method, but then ignore the need to go one step further and say well, what does that translate to in terms of radiological impact.

DR. NETON: Right, but I think you're speculating that they were totally driven by chemical toxicity. We have to have some

evidence that that was the case, and I think -- you know, we need -- someone need -- we need to go back and look and see what their procedures were during that time frame and what the potentials for exposures were. It may --

DR. BEHLING: And -- and the way to do this is to actually sample the -- the bioassay data and saying do we have paired analysis. In other words, if a worker was assessed for uranium by fluorometric method, was there a concurrent assessment for -- for gross alpha and -- and to what extent, for instance, could we match dates. I guess the question I would have is when, for instance, a urinalysis was done by fluorometric method that has a one -- a particular date, to what extent does that date match, for instance, a radiochemical analysis because it may have been done by a different laboratory and may have a very different time assignment to it --

DR. NETON: Right.

DR. BEHLING: -- in terms of when that was performed.

DR. NETON: Yeah, I would suggest it would be redundant to do both. I mean if you're going

to go the way of chemical analysis, there's no need for fluorometric analysis. But I think John has suggested that's exactly what you guys might do. I think we have a path forward here.

DR. MAURO: But it is -- but it is a potential SEC issue --

MR. BERONJA: Right.

DR. MAURO: -- if the path forward isn't there and if the -- if you can't navigate your way through the problem, I -- I mean I -- it doesn't sound like you were decided.

DR. NETON: We can leave it on there for now.

DR. MAURO: Can leave it on there.

DR. NETON: Yeah, it might drop off, but -- yeah.

MR. BERONJA: Okay. Nothing else on that one?

4.5-8; 4.5-9

We'll move to 5-4 -- .5-8, and again an inconsistent presentation of dates of operation. I think this is straightforward. NIOSH has said they're going to revise accordingly, so unless there's any further discussion on that, we'll move on.

And then I think 4.5-9 is essentially kind of a repeat of something, you know, we pointed out

earlier on this neptunium and depleted uranium not being included in Table 5.9, so again I guess as we get to this point, this could be an SEC issue even though it's not noted as one. And I don't know if you guys want to go over the NIOSH response. Might not be...

MS. HUGHES: The issue was that there was a -- evidence of a small amount, four grams, of neptunium being stored in the building for a test that was planned. But indications from available documentation were that this amount was actually transferred to a different research facility. We believe that this small quantity that was not used did not necessitate a bioassay program for uranium.

MR. BERONJA: Or for neptunium?

MS. HUGHES: I'm sorry, neptunium, yes.

MR. BERONJA: Uh-huh. I guess as long as that's the case --

DR. MAURO: The -- no, that's a statement of fact, if that's the --

DR. NETON: Well, I mean you guys can certainly review that --

MR. BERONJA: Yeah, we can confirm that, yeah, yeah.

DR. NETON: -- (unintelligible) and see if you concur with that.

DR. MAURO: No, you ge-- I mean if that's in fact what transpired -- yes.

MR. BERONJA: We'll have that as an action item for ourselves to con-- confirm that. Anything else on that one?

4.5-10

We'll keep moving forward -- 4.5-10, inappropriate solubility type for lung cancer --

MR. GRIFFON: Can we go back to that last one just for a second? You addressed the neptunium, but what about depleted uranium? Wasn't that the other...

MR. BERONJA: Yeah. I think the last comment was that bioassay for uranium was well established early in the site's history.

MR. GRIFFON: Oh, okay, I didn't (unintelligible). Thanks.

DR. MAURO: And I think that that would be part of this data validation process, we'd capture under that umbrella and confirm that -- that statement.

MR. BERONJA: 4.5-10 has to deal primarily with

the use of type S for lung cancer, and I don't know the context in which this was provided, but I think there's probably a general statement to use type S and there was probably no distinction made for a lung cancer.

DR. NETON: Yeah, this is the uranium aluminide issue and this is something we're aware of and -- I didn't look at the response, but -- I don't -- I forget what we said here. Okay, yeah, this is TBD -- TIB-71. We -- we developed a TIB to cover this uranium aluminide, much in the -- in the spirit of what we did, maybe not as extensively but in the same manner as we looked at for super S in TIB-49.

DR. MAURO: Would -- would this be --

DR. NETON: It's a unique exposure scenario in -- in the complex.

DR. MAURO: Is this unique to this facility, this special form?

DR. NETON: Maybe not. That's -- that's one re-- that's one thing we're looking at right now to make sure, in the spirit of -- of Phil's comment a long time ago, I think, was that we need to make sure this is -- is viewed at other

-- potential possibility at other sites, and we're looking at that right now.

DR. MAURO: Wanda, this sounds like something similar to that OTIB-68 we talked about previously, another -- another -- another OTIB that might --

MS. MUNN: I have that same feeling.

MR. SCHOFIELD: You love it, Wanda.

MR. BERONJA: Okay, so looks like that's -- we know the path forward there. Unless there's anything else, we'll keep moving forward.

4.5-11

4.5-11 talks about elements presented in TBD two are not addressed in TBD five, and I think kind of the quick answer to this is it looks like NIOSH is going to review that and address any inconsistencies or when things are not reported.

DR. NETON: Elements presented in -- this is a finding on a finding here. I'm going to object to these kinds of findings (unintelligible) add to the numbers.

MR. BERONJA: So...

DR. NETON: I would go back to what John had earlier suggested. I -- I would --

DR. MAURO: Collapse.

DR. NETON: -- appreciate it if SC&A would go back and collapse some of these into a more workable form where we're not sort of repeating things and they're consolidated in areas where they make sense.

DR. MAURO: Along these lines -- you know, this is our first matrix and your first response.

DR. NETON: Yeah, I understand. I was trying to be funny.

DR. MAURO: Yeah. No, we'll -- I think that the next iss-- next iteration will be a revised matrix that will try to collapse, consolidate, incorporate what we're discussing around the table and we're going to try it again.

DR. NETON: That's fair.

MR. BERONJA: Okay, so I think there's a reasonable path forward on this one, too, so unless there's anything else, I'll keep moving forward.

4.5-12

And I think we finally get to your -- your 4.5-12, Hans, which you started to address before on the different laboratories. I don't know if you're on mute, Hans, or --

DR. BEHLING: Yeah. No, I -- I just unclicked my mute here. Yeah, this -- this goes to the issue of interpretation, which may or may not be claimant favorable. Repeatedly in the TBD there is reference to the statement that is -- and I read, It is assumed that this is a typographical error and 2.0 cpm is really 2.0 dpm per ml, for instance, as a MDA value. And -- and I'm not really sure that necessary has to be the case, and would certainly raise a serious question in my mind. If -- if it is a typographical error that was repeatedly done, how much stock can I put into a -- an analytical laboratory. And if it wasn't an error, then clearly the conversion of cpm to dpm would certainly be claimant unfavorable. At least the assumption is that they intended to declare this as a disintegration per minute as opposed to a count per minute. Obviously as a minimum there's likely to be a factor of two difference based on -- on counting efficiency, so I raise that as an issue.

MS. HUGHES: Okay, this was actually -- NIOSH response included that this was actually taken out of a brochure by this bioassay contractor,

and it turns out that there was another column that was missed, since this brochure consisted of a scanned document I believe, and a draft revision has already been prepared that should correct this. And the response does include the -- the revised findings. However, it -- it should be pointed out that actually this bioassay contractor only provided a quote and a brochure to the site. We have not seen any indication that they actually were used for bioass-- to provide bioassay analysis to the site, so this issue might go away. There -- there's documentation that they were definitely in communication with the site, but from the bioassay data that is available we have not seen that they were actually providing worker samples -- or analysis of worker samples.

MR. BERONJA: Hans, anything further you want to say?

DR. BEHLING: Yeah, and -- and I guess I'm not sure, I'm just trying to refresh my own memory. Was the issue of comparing data presented in behalf of Shepherd 1959 and the NSEC values that certainly are -- they're orders of magnitude apart when you have, in the case of

gross alpha, 7.5 dpm per liter that is -- is -- converts to 200 cpm per liter under the NSEC value. And -- and if that were to be actually converted to dpm, it might turn out to be 400. And I guess those two values are very difficult to reconcile, those two sets. And I'm not sure you -- that was included -- yeah, yeah, it was included in your write-up, so if you look at 4.5-12 at the very bottom, you see a table here that compares the two sets of data. And quite frankly, they are at least a couple of orders of magnitude apart potentially.

MR. MORRIS: Well -- this is Bob Morris. I actually scanned those documents at -- at a copy machine, and I remember reading them. They -- it was not clear to me that they were actually contracts. They were proposals for -- in request to a response for quotations, and so I -- I don't know that anybody ever actually issued a contract to that laboratory.

DR. MAURO: I think it might be important to confirm that because let's say you do have records where the data are reported for a particular bioassay in the incorrect units --

MR. MORRIS: Well, what would be -- the only

way you can confirm that is to look at the data when it comes available to look at. And I don't know that we could actually sample 1,000 cases and find the one that this laboratory provided.

DR. MAURO: No, no, may-- is there -- are the records such that you would know for datasets for workers which laboratories at what time for what facility --

(Whereupon, multiple participants spoke simultaneously.)

MR. MORRIS: I never remember seeing any data that way.

DR. MAURO: It -- it would -- well, I guess this is -- it would be, to put this to bed, that in fact this laboratory did not do the analysis and did not do -- and they're not reported incorrectly. Ideally you could actually go to -- see if the contract was -- it wasn't a contract (unintelligible) --

MR. MORRIS: Well, we -- we got all of the documents contemporary with -- it was three proposals in 1959, as I -- as I recall. I mean this is going back a couple of years for me and I was just reading as I scanned them, but there

were proposals in response to a request for proposals.

DR. MAURO: Okay.

MR. MORRIS: And I don't -- and that was everything that was in that file folder.

DR. MAURO: And then there's no information whether you actually executed a -- well, you didn't exe-- I shouldn't say you -- whether the Santa Susana folks actually executed a contract (unintelligible) --

MR. MORRIS: No, I think the only way you're going to know that is to look at the data as it's -- they're represented on the individual's bioassay card to know.

DR. MAURO: But -- no, but see, on his bioassay card would be a number that -- where you have to take at face value as being the number that was reported, but it may be an incorrect number. Other words, if they made that error. Do you see what I'm saying? So how do we know -- unless it would be so --

MR. MORRIS: Well, the error was when we wrote the Technical Basis Document we missed one of the columns of data on page two of the scanned sheet. We looked at page one, and should have

looked at page two, also.
DR. MAURO: Oh, I misunderstood, I thought --
MR. MORRIS: (Unintelligible) hidden in the review (unintelligible).
DR. MAURO: Okay, I'm sorry. I misunderstood. I thought that this laboratory proposed to follow a certain protocol, report their information in a certain way, and they may have been making a systematic error.
MR. MORRIS: No, I don't think that's -- if you've got that impression, I don't think that's what you should have.
DR. MAURO: Oh, okay, I misunderstood. Okay. It's just a matter of transf-- transposing information --
MR. MORRIS: Yeah.
DR. MAURO: -- from their proposal into the site profile.
MR. MORRIS: I think that's more correctly stated, yeah.
MS. BEACH: Is it correct to me, though, reading this last statement of your response, it should also be noted that neither of these companies probably provided very many bioassays to the site -- to me, that -- that leaves doubt

in my mind if you know for sure.

MS. HUGHES: We know for sure that none of the claimants that have bioassay data have any data that includes this company.

MS. BEACH: So you know that for sure.

MS. HUGHES: But only the claims we have. We cannot speak for any --

MS. BEACH: Okay, so I -- I wanted to make sure I understood that statement.

DR. MAURO: So as the claims come in and you look at their bioassay there, you will know.

MS. HUGHES: Yes.

DR. MAURO: And you will be able to confirm whether this problem exists or not.

MS. HUGHES: Yes.

MR. BERONJA: It looks like this one's okay. You've already done a draft revision. Okay. Anything else? Otherwise we'll --

MR. KATZ: So is this then not an SEC issue?

MR. BERONJA: It doesn't look like it's an SEC issue, unless they find some-- or...

MR. KATZ: Right. Okay.

4.5-13

MR. BERONJA: All right, 4.5-13, the evaluation of the uranium bioassay data should be

reviewed. And again, Hans, I apologize. I don't know if this was yours or if you can elaborate any on -- on this particular comment or if this was Dunstana's.

DR. BEHLING: No, this is mine, and I think we've already discussed it, and that is the issue of trying to match the fluorometric method --

MR. BERONJA: Oh, okay.

DR. BEHLING: -- with the enriched -- with the radiological method, because as I said, in the absence of knowing what type of uranium material you are assaying in -- in your fluorometric method, you don't really have an understanding of how to convert that into a -- a dose to a specific tissue. And so as we already said, if the early days the concern was more -- leaning to more towards the chemical toxicity and no radiological assessment was done for -- with the urine sample, then it's kind of up for grabs as to how to convert micrograms per liter into a dose value. Conversely, if only the radiometric method was done, then I don't really care because the only potential error there is the differences in

dcfs for U-238, 235 and 234, and the -- the differences are marginal, that wouldn't concern me. You can always default to the highest dcf for that matter, which in most instances would -- for enriched uranium would obviously be for U-234 anyway. So the issue is really trying to be sure that when we are looking at bioassay data that cannot necessary be also linked to a concurrent radiometric analysis, what is the default approach.

MR. BERONJA: Okay. All right. Well, this is something where I will definitely do some condensing since this is really kind of a repeated one.

4.5-14

So unless there's any other discussion on that, we'll move on to 4.5-14, personnel exposure records do not appear to be complete or of good quality. And again, I may have -- I'm not sure how much of your original stuff here -- I can tell this is yours, Hans, by the things that were excerpted and how much of the -- from the site profile review I included here, but is there anything else that you want to elaborate here on -14?

DR. BEHLING: No, and I guess my concern was that most of the records are at this point confined to hard copy form. And of course the acknowledgment that some of these records may be very difficult to decipher, and I've looked at some of the records. They are poor quality. I'm -- I'm sure that some of them were retrieved from fiche -- microfiche or other documents, and sometimes you're at a loss to even identify what the numbers represent. So when -- when in fact we're dealing with records that are very difficult to interpret based on poor quality that you may have available, it puts the -- the dose reconstructor in a -- in a difficult situation. And -- and also the fact that we don't have these in -- in electronic form, which I assume we don't have electronic form, makes the whole audit process, which normally we do anyway for data complete (unintelligible) data integrity are much more difficult assessments.

MR. BERONJA: Okay. Would NIOSH --

MS. HUGHES: Well, the records from the site indicate that -- they're fairly typical for this type of site that operated around the same

time frame, and these records aren't much -- much -- all that much worse or better than records from any other site. The TBD provides guidance to the dose reconstructors how to use and interpret the data. And as we mentioned earlier, this dat-- the data from the site has been abstracted for several epidemiological studies, some of which have pointed out that actually this -- the completeness of the data is quite good for data from that time frame. And I've -- I've seen a lot of the claimant data that we have, and it is true that it is -- some -- it -- it's handwritten entries on bioassay cards, but it's not illegible. It's fairly easy to -- to get information off these cards. Also, especially with the bioassay data, you would have the reports that have been provided by the bioassay contractor in form of a bioassay card. Those are fairly usable and for -- for external you would have the dosimetry contractor reports, so I guess our -- our point is that we don't think the data is in particularly bad shape, espec-- it's definitely not in the shape that you could not use it for this program.

DR. MAURO: I think this goes toward the sampling issue. That is, when we go in and design our strata and sampling, you know, we -- one of the pieces of information that will emerge is whether or not you can read the reference and create a database that we feel is (unintelligible) confidence in. So I think that this is part and parcel of what we talked about before.

MR. BERONJA: Yeah. In fact, I think maybe the next comment also is in the same light, but anything else on this --

MS. BEACH: I have a question on the strata. Will you do internal and external separately, as in two separate studies?

DR. MAURO: Well, right now it looks like that we're -- all of our discussion has been focused on internal. When we get to the external part of this review I guess a judgment will need to be made whether or not there's a need to do a stratified sampling of the external data. So I --

MR. BERONJA: Uh-huh.

DR. MAURO: -- the answer is I don't know right now. We'll get there, though -- perhaps.

MR. BERONJA: Yeah. My guess is the work to do is not necessarily more and it might be -- I think it's of value, given what we'll see, but we can talk about it when we get to that section.

Anything else on this -- this question?

(No responses)

4.5-15

4.5-15, site survey data, source term cannot be regarded as useful survey data -- I think we have the term "circuit" -- data for bioassay data and dose reconstruction, and Hans, I think this was another one of your findings?

DR. BEHLING: Yeah, and I guess the -- the comments that I included, and you included in your write-up, pretty much speak for themselves. When you don't have bioassay data, you obviously hope that there is alternative methods by which you can re-- reconstruct inhalation and ingestion doses. And of course that would require a fairly substantial body of -- of air sampling data, preferably breathing zone air sampling data, and if not, the general air sampling data. And at the same time, I'm reading here, "However, these data are not

likely to be in individual exposure records." Now again, this imposes some serious obligations on the part of dose reconstructors to go outside of his normal scope where he gets a -- a document or a file of -- of records that's -- involve personal exposures. And -- and of course when those are not available, you're now asking him to go and do his own investigation regarding air con-- air sampling data and possibly, in the worst case, source term reconstruction methods that would even be more difficult. So the question is, is this a realistic expectation to ask a dose reconstructor to go ahead and -- and -- and look for these kinds of alternative approaches for assessing internal exposure. And to my estimation, it is not. And so if -- in the event there are no bioassay data available in behalf of a single claimant, I think it is up to NIOSH then to perhaps provide that alternative approach by -- by gathering data for -- for their (unintelligible) data and perhaps source term reconstruction data so that this is not the obligation of the dose reconstructor to perform.

MS. HUGHES: Yeah, I think this should be possibly -- this should be addressed in the coworker study so that any worker who -- where no bioassay data is available could be covered with that, and this language will be removed from the revised TBD.

DR. NETON: Yeah, I -- I don't disagree with that. I think, you know, we went a little overboard in giving some leeway to the dose reconstructor. But I would -- I would object to the fundamental statement of the issue because it directly contradicts the -- our regulation which -- the con-- the finding says site survey data cannot be regarded as useful survey data for bioassay in dose reconstruction. I think that's false.

DR. MAURO: I agree with Jim. I think Jim's statement's correct. I think our main concern is an ad hoc approach --

DR. NETON: Right.

DR. MAURO: -- is not the way to do this.

DR. NETON: I'll buy that, yeah.

DR. MAURO: And I think we should reword the statement.

MR. BERONJA: Uh-huh.

DR. NETON: But -- but we -- I do -- we do agree that we can remove that statement from the TBD and provide better guidance.

MR. BERONJA: Okay. Anything else?

4.5-16

I think this -- the last internal comment, potential unmonitored internal exposures associated with radiation incidents are -- are not addressed, and we've identified this a little bit earlier on when we talked about the description of some of these different units, and --

DR. NETON: We could discuss this I guess at some length, but I think it kind of falls into the general category we discussed earlier where the proof is going to come out in the -- the robustness of the bioassay data that is being characterized.

MR. BERONJA: Uh-huh.

DR. NETON: If indeed we have sampling data that covers incidents as well as routine operations and develop a fairly substantial coworker model, then this goes away.

MR. BERONJA: Yeah.

DR. NETON: I say this has to remain open. I

agree it is a potential SEC issue, and we'll work from there.

DR. MAURO: Yeah, I would say that here is a case that when we develop our strata, in addition -- in addition to identifying work categories, building time periods, incidents --

MR. BERONJA: Yeah, right.

DR. MAURO: -- another strata --

MR. BERONJA: Yeah.

DR. MAURO: -- that we need to samplify --

MR. BERONJA: Uh-huh.

DR. MAURO: -- and that would cover this issue.

DR. NETON: I think so. We'll leave it on there.

4.6-1

MR. BERONJA: Okay. All right, moving on to external, I guess the first comment is no coworker model, and I guess that kind of relates to maybe the confidence in the -- in the badging of -- of all the workers and having a -- having a better source of information than probably relying on other TBDs and other information. And so maybe this is par-- largely addressed by the NIOSH comment.

MS. HUGHES: Yeah, well, since this data is

available from previous studies, it's not just the internal, it's the external data as well, so we're currently looking into a coworker study to see if it's (unintelligible).

MR. BERONJA: Okay.

DR. MAURO: I've got a question, though. I think it's pretty clear that, with regard to internal, there is going to be need for SC&A -- certainly with direction from the workgroup -- to develop a -- what I call a stratified sample to address the kinds of issues -- the complex issues. It's not apparent that we would -- we would want to do that now. Maybe -- with regard to external because it sounds like that there may be a straightforward matter whereby you're going to come up with a coworker approach whereby you say okay, here's how we're going to do it, and then we could review the dataset within the context of your coworker model. See, I think -- I -- that might be a -- a more efficient way. I think -- I think when it comes to internal, that is a -- a big -- a big issue that requires design, iteration and then implementation. Here what I'm hearing here is that you've got the data. You think

you can build a coworker model for external, and usually that's a lot simpler. And -- and it might be better, in order to -- for us to just look at your coworker model and the supporting data once that's done.

Is there a time frame when you think this coworker model might be available?

DR. NETON: I don't believe at this point. We -- we could certainly get back to you on that.

DR. MAURO: I -- I'm just operating on the premise that the -- this is a more -- more straightforward exercise when it comes to external.

DR. NETON: At least for photons. There may be some neutron issues down the line.

DR. MAURO: There might be some neutron issues, yeah.

4.6-2,3,4

MR. BERONJA: Speaking of neutron issues, unless there's anything else on that one, actually the next three -- I think at least the next three comments all -- all deal with neutrons, and I think -- my guess -- I think -- my understanding, John, is -- you could look at these. I think these probably have all been

done before in other reviews, I think.

DR. MAURO: Oh -- oh, this is the -- yeah, the -- the -- basically the 500 keV, one MeV wri-- whatever -- and whether or not you could reconstruct the doses to workers -- apparently there -- there are neutron exposure potentials here. Apparently there was NTA film used. The question becomes is that going to be adequate to reconstruct external exposure to neutrons for all workers. Is there knowledge on the energy distribution in the different categories of workers and the ability to adjust for that, the fact that the NTA film is really not going to do the trick, without some type of adjustment based on knowledge of either the energy distribution of the neutrons or the neutron to photon ratios.

DR. BEHLING: Let me weigh in on this because, as you already said, this is in fact something that's come up repeatedly, and there is an inconsistency throughout the -- the facilities -- the records facility complexes where in some instances people say okay, we realize that the NTA film is not very sensitive to -- to energies below 500. Then there are other

facilities that say below 700, and then there's some even that are more gracious in saying really, in truth, below 1,000 keV we really don't have a good response. And so the -- the issue of selecting 500 is -- may be a threshold value, but it clearly sort of understates the lack of sensitivity of NTA film at that energy. But the other thing that I also wanted to bring out was the issue of finding 4.6-2, which states that the -- the pic-- the dosimeters were capable of measuring both thermal and (unintelligible)* neutrons, and I raised that as an issue because in one of the statements it says both (unintelligible)* and thermal neutrons were measured and recorded as whole body dose in rem. I -- I raise that as a question because I'm not sure anyone really measured thermal neutrons, and I guess I'll leave it up to Jim or Larry or somebody else to determine whether or not I'm -- I'm being presumptive here in assuming that they were not measuring people for thermal neutron exposures -- which may be an issue for sodium-cooled reactors.

DR. MAKHIJANI: This is Arjun. I -- I joined

the conversation a little while ago. The -- the -- just to pick up on the last thing that Hans said, it's -- they had such a variety of reactors over there, and -- and then the complication with the NTA film in Santa Susana is characterizing the correction factors for NTA film because expected neutron spectra of different reactors would probably be different, the exposure geometry the different -- I don't know if -- if -- if the adjustment factors are going to take all that into account or whether there's a general factor that you simply apply, which would not seem so appropriate in this case.

DR. MAURO: Would this go to -- to a coworker model? Other words, before we were talking about certainly a coworker model for assigning doses to -- photon doses, penetrating doses. At the sa-- would you have a separate protocol for neutron, or would that be a -- part and parcel to your overall external coworker model?

DR. NETON: You know, I don't know at this time. I'm not familiar with the dataset enough to -- to come up with a judgment on that. My guess is, you know, we would probably have to

do an NP ratio thing here, but we've got to get past this thermal and -- and detection limit issue here first and -- I think this is early in the process. We're just going to have to get back and -- and look at this a little bit. I don't know enough about it right now to make a good statement.

DR. MAURO: Yeah, I think that these are very important issues. They're SEC issues. And there really is -- until I guess you folks get back to us --

DR. NETON: Yeah, we're going to have to get back --

DR. MAURO: -- with strategy, there really isn't much for SC&A to do in terms of looking at data. I think it's better we sit tight for a while.

DR. NETON: Yeah, I mean we have some responses here, but I'd like to get back and -- and consider these a little bit more. They're draft responses.

MR. BERONJA: Okay. All right, unless there's anything else, I think we really only have truly one more comment.

MS. BEACH: Before you go on --

MR. BERONJA: Yeah.

MS. BEACH: -- we are considering 4.6.2 an SEC issue?

UNIDENTIFIED: Yes.

MR. BERONJA: I think that -- I think the three of them kind of couple them all together --

DR. NETON: (Unintelligible) leave them on there.

MR. BERONJA: Yeah.

DR. NETON: They can always come off --

MR. BERONJA: Right.

DR. NETON: -- if we need -- you know, if we come back with a (unintelligible) --

MR. BERONJA: Yeah.

DR. NETON: -- response.

MR. BERONJA: Yeah, I've noted all three as --2, -3 and -4 as all being coupled with the SEC.

4.6-5

So the last one really is the 4.6-5, the dosimeter response to low energy --

MS. BEACH: Okay, one more thing -- sorry.

MR. BERONJA: Sure.

MS. BEACH: We want to ask -- okay, the 4.6.3, the use of Y-12 data as surrogate, was that

done or where -- where did that come from?

MR. BERONJA: My understanding -- I think -- Arjun, I'm trying to thi-- was this -- was 4.6-3 one of your comments?

DR. MAKHIJANI: Could -- could you repeat that, Greg? I -- I had it muted -- I was trying to unmute it and I missed your comment.

MR. BERONJA: Yeah, this is ac-- you know, I forget if this was maybe yours or Hans' -- due to the level of uncertainty surrounding neutrons at Santa Susana, it may not be appropriate to use Y-12 data as a surrogate. I think that we -- fact that we said this, I think Y-12 data was used as a surrogate. I don't --

UNIDENTIFIED: Yes.

MR. BERONJA: I don't rec--

DR. MAKHIJANI: I -- I -- I believe -- I -- I believe that that is -- I'm -- that's where this comment comes from is that because the neutron field situation is likely to be very different at Santa Susana than -- than at Y-12, we can't be transferring the -- the approach to dose reconstruction from Y-12. I'd have to -- I'd have to go back and -- and look at the

details of the TBD --

MS. BEACH: So was it listed in --

DR. MAKHIJANI: -- (unintelligible) the details of where it came from, but it wouldn't have been in there if that had not been suggested, obviously.

MR. BERONJA: Yeah.

MS. BEACH: So it was in the TBD, it wasn't in the ER report.

MR. BERONJA: In the TBD, yeah.

MS. BEACH: Thank you.

MR. BERONJA: Yeah. So we go to 4.6-5, dosimeter response to low energy photons. The TBD does not discuss issues associated with the response of dosimeters to low energy photons. Hans or Arjun, was this one of yours saying...

DR. BEHLING: It's not --

DR. MAKHIJANI: It might be --

DR. BEHLING: -- one of mine.

DR. MAKHIJANI: -- Hans'.

DR. BEHLING: No, it's --

DR. MAKHIJANI: Well, it's --

DR. BEHLING: -- not mine.

DR. MAKHIJANI: -- not mine. I don't -- it might be somebody else on the team.

DR. NETON: It's a Hans' one. I guarantee you it's Hans'.

DR. BEHLING: No, it's not.

DR. NETON: It's not Hans'?

DR. BEHLING: I would have not included because, you know, if -- if they're using film dosimeter in the early days, we know what the issues are regarding their energy dependence and -- and I think we have resolved those things any number of times in behalf of other site profiles, so this is not my comment.

MR. BERONJA: So we can -- shall we take this one off the -- shall we delete this one? And actually we delete this one and we can delete the next two, so we're done.

4.6-6,7

No, let me just discuss the next two. I think I agr-- the 4.6-6, there's no justification for use of surrogate time periods in considering releases from the stack -- this is environmental comment and mistakenly got included here. 4.6-7 talks about adequate consideration of Area One in the TBD. Area One's really not part of the covered areas so we pull that off the table. So I think that's

it as far as the formal matrix.

DR. MAKHIJANI: I mean Greg, you and I discussed this the other day. I mean we're presuming that Area One is not under consideration.

MR. BERONJA: Right, right. Yeah, yeah, I think --

DR. MAKHIJANI: So we're suggesting dropping that.

MR. BERONJA: We're all in agreement on that here.

DR. MAKHIJANI: Okay, fine.

MR. BERONJA: Yeah.

MS. BEACH: Okay, I have a question for NIOSH. Is there -- do you guys have worker -- some of your worker interviews on line? Or have you done any?

MS. HUGHES: Yes, there were -- well, there were worker interviews done with -- in association with the evaluation report, and yes, we do have them.

MS. BEACH: Are they on line?

MS. HUGHES: They're not on line, but they should be available to you -- they -- I think are referenced in our evaluation report, so if

you have --

DR. NETON: Whether they'd be on line or there'd be a reference, I don't know, but we can put them --

MS. HUGHES: Yes, they should be accessible to you.

DR. NETON: Can we -- could we get them on the O drive?

MS. HUGHES: I think they are on the O drive.

MS. BEACH: Yeah, I haven't looked.

DR. NETON: Okay, we'll check -- we'll check to make sure --

MS. HUGHES: Typically we put all the references for the evaluation report in a -- in a folder that's accessible to you so you can look at all the references that we referenced in the evaluation report.

MS. BEACH: Yeah, and I apologize, I haven't looked.

And then you guys said yours are in review. When will those be available to us?

MR. BERONJA: I think they've gone back to the workers for input. I'll have to talk to Kathy DeMers, who's working on that, see what the time frame -- the likely time frame. And then

I think it goes back for DOE review again, I don't know. You might understand these procedures more than I do.

UNIDENTIFIED: I'm not sure.

MR. BERONJA: So I don't know if that's -- it's probably several weeks.

DR. MAURO: We're -- we're -- yeah, we're -- we're in a funny state. Remember when I -- we opened our meeting, so I suspect that once the package comes back from Kathy DeMers --

MR. BERONJA: Right.

DR. MAURO: -- when she has made whatever corrections need to be made in light of feedback from the workers --

MR. BERONJA: Right.

DR. MAURO: -- that then becomes --

MR. BERONJA: That becomes part of the document --

DR. MAURO: -- part of this package --

MR. BERONJA: Right.

DR. MAURO: -- as an attachment, which has to be part of the review -- the complete review that DOE has to do --

MR. BERONJA: Right. Right.

DR. MAURO: -- so -- I guess what I'm getting

at is that I don't think you're going to see that until DOE --

MR. BERONJA: Right.

DR. MAURO: -- you know, clears it --

MR. BERONJA: Get the -- get the review. Uh-huh.

DR. MAURO: -- DOE clears it.

MS. BEACH: But once they're all cleared, then you will automatically send them out to --

DR. MAURO: Oh, yeah, then --

MR. BERONJA: Yeah.

DR. MAURO: -- then -- then --

MR. BERONJA: Then it becomes part of this document --

DR. MAURO: Right.

MR. BERONJA: -- this review.

DR. MAURO: Right. Now the question I have, 'cause I'm not sure -- let's say we get some feedback from -- we get our -- we get the material back from Kathy DeMers. And it -- and it provides greater insight to some of the issues --

MR. BERONJA: We might revise our document.

DR. MAURO: -- we mi-- yeah, so I'm -- I'm -- I guess -- a little guidance here. Let's say it

turns out some new issues emerge as a result of the feedback we get from the interviews. Normally we don't -- I guess we -- we don't revise the document, but we -- you know, it would be an attachment, it would be there, so it would be -- it's in the record, but then of cour-- the problem becomes it's not part of the matrix, so we -- do we -- would we just add in those new items to the matrix if -- if something new comes up? You know -- other words, when -- when this is issued officially, finally, and is available for public distribution, including the Kathy DeMers attachment which is the worker interview, what might happen as a result of that -- we might identify a number of additional issues. What I'm suggesting is we simply add them into the matrix and -- so that they're on the matrix as new -- as new issues, if that's okay with you folks.

MR. GIBSON: Yeah.

MR. BERONJA: Yeah, and until they're addressed similar to what we've done here, we'll probably somehow highlight them or --

DR. MAURO: Yeah, we'll -- we'll indicate these

are new --

MR. BERONJA: -- some new things, yeah.

DR. MAURO: -- have come out since the last meeting.

MR. BERONJA: Right, and --

DR. MAURO: Yeah.

MS. MUNN: Well, are we going to -- are -- are you going to put this matrix into the general format that we've been using in procedures? If so, then the date will appear automatically.

DR. MAURO: I -- yeah, a -- a good question. I guess the way we've been doing it is each set of new information is dated. In other words, we're -- we're -- we're going to be filling out this matrix further. There's going to be another tier and we'll date it, the way we've done on others, so that we know that the new information is the result of what came out at this meeting.

MR. BERONJA: Right.

DR. MAURO: So -- so -- so yeah, I think that the -- the fundamental approach is we prepare a matrix based on our report. You folks respond the way you have -- I think you still have some responses that you may want to provide. In

other words, in some places you don't have responses.

DR. NETON: No, there's a response --

DR. MAURO: Was I (unintelligible)?

DR. NETON: -- on every issue.

MR. BERONJA: Yeah.

DR. MAURO: Okay.

MR. BERONJA: Yeah. Yeah.

DR. MAURO: Yeah, but --

DR. NETON: But we might -- we have some that we might want to revise, too.

DR. MAURO: Right. The-- then -- then I think that -- then there -- you notice there's a space there called "Board action." I think what we'll need to do is we will work, together with you folks, to make sure we clearly articulate what has transpired at this meeting and what actions the Board -- the workgroup has directed us to do, as best we can te-- you know, so we'll fill that in together, and then I guess -- you know, and we'll get that back to the workgroup, say okay, here's our revised matrix. I'm trying to think of the mechanics of this thing.

MR. BERONJA: Yeah, 'cause we're going to have

-- you know, it's not like there's a master document, either, that we're all going to, whether they're going to be working on it -- we might be working on it --

DR. MAURO: Well, yeah, we got --

MR. BERONJA: -- so we've got to integrate --

DR. MAURO: Yeah, we've got to work together on this.

MR. BERONJA: Yeah. Yeah, yeah.

DR. MAURO: On the next -- on the next go-around on this -- this document, but I think it also should reflect the dates. That is, the -- it should be clear, you know, that whatever marching orders we have, where we see "Board action", it would be associated with the date of this meeting. This is what emerged from this particular meeting.

MR. BERONJA: Right.

MS. BEACH: So do we have a clear picture of marching orders today?

DR. MAURO: We're going to try to put that together and we'll --

MR. BERONJA: Yeah, I think we do.

DR. MAURO: -- work with -- we'll -- we'll work with NIOSH --

MR. BERONJA: Yeah.
DR. MAURO: -- and put together our story, and I think we -- maybe we pass it back to you folks to make sure you're seeing it the same way we see it, and then it goes into the matrix.
MR. BERONJA: Yeah.
DR. MAURO: Is that okay?
MS. BEACH: 'Cause I'd like to see that sampling done for the -- the --
DR. MAURO: Oh, the --
MS. BEACH: -- the stratosphere.
DR. MAURO: -- the strata, the strata.
MS. BEACH: The strata.
DR. MAURO: Well -- well, that's -- that's -- the -- that's one -- yeah, the strata -- we'll make reference to -- that's one of our marching orders. The actual document is -- that's -- we usually send that out as a separate -- as a white paper, a white paper says here, here's the strata that we'd like to use. You have a chance to look at it and say yeah, this is good, and then we design a sampling program around that and -- and we don't implement it, though, until you folks say implement.

MR. BERONJA: Right, and then it will be -- might be a couple months.

DR. MAURO: Yeah, ex-- yeah, it -- it could take a couple of months to implement those --

MS. BEACH: How do you determine the percentage of what you'll sample?

DR. MAURO: We go to our statistician. Turns out it's very simple. He tells us that for every strata you have to have at least 20 samples.

MS. BEACH: At least 20?

DR. MAURO: Twenty, yeah.

MR. BERONJA: Although -- although Fernald was a little different.

DR. MAURO: What happened on Fernald, yeah --

MR. BERONJA: I don't know, he came up with a large number --

DR. MAURO: Bigger number, yeah.

MR. BERONJA: -- so I don't think we can use it --

DR. MAURO: We -- we will do the best we can to communicate to you the number and why.

MR. BERONJA: Yeah.

DR. MAURO: Right now -- I said 20 because that's what came out of the --

MR. BERONJA: NTS, yeah.
DR. MAURO: -- NTS, yeah.
DR. MAKHIJANI: This is -- this is Arjun. You usually -- I -- I've discussed this with Harry on a num-- in a number of different contexts, and usually if you have a very large pool of -- of claimants or -- or employees that -- relatively homogeneous that you're sampling, then you can make good statements if you do a random sampling of 20. But if -- if it has to be stratified, then -- then it gets very complicated, and then sometimes -- the reason it got complicated for Fernald is we asked him -- well, we want to catch people who worked in Plant 7, and Plant 7 was only open for a little while, and what do we do about that? And so it -- it gets complicated if you're over-sampling for a very -- for -- for a particular group in order to be able to say something about them, and then -- then it can get -- the sample size can get very large. But usually 20 per strata.
MR. BERONJA: Okay.
MS. MUNN: This is Wanda. In your next go-round with the matrix, after you've collapsed a great many of the items that we had today, I

might suggest that you consider the wording where you're -- your heading of "Board action", do you really mean Board action or do you mean workgroup action? It really should --

DR. MAURO: Yes --

MS. MUNN: -- be distinguished --

DR. MAURO: -- yeah, we have to get the terminology right. It would be --

MS. MUNN: I think you'd better say workgroup.

DR. MAURO: Yeah, workgroup recommend a path forward or something like that.

MS. MUNN: Yeah. Yeah, workgroup recommendation.

DR. MAURO: Yeah.

MS. MUNN: It's not a Board action.

DR. MAURO: Yeah, absolutely.

MS. MUNN: And I agree with you, John, the dates are essential.

MR. GRIFFON: This is Mark Griffon. Can I ask a question? The -- the SC&A matrix is a site profile review. Did SC&A formally review the ER report?

MR. BERONJA: Yeah, Mark, we looked at the ER report, but you know, more just to get a general sense for it, and then when we did our

site profile review and came up with the comments, as you see on the matrix, we took an initial shot and in fact --

MR. GRIFFON: Right.

MR. BERONJA: -- it was largely me, at which issues were SEC issues. But we were not formally tasked to review the --

MR. GRIFFON: That's what I -- that's what I was questioning, and --

MR. BERONJA: Yeah.

MR. GRIFFON: -- the other component of that, which I think is critical, is -- I saw in NIOSH's ER report they addressed some of the petitioner's questions --

MR. BERONJA: Right.

MR. GRIFFON: -- and I think that -- that the petitioner would probably appreciate it if SC&A al-- you know, if -- if we also considered their specific questions. I mean we may completely agree with NIOSH's response, but I think that should be on the table, so I -- I think we should probably -- it may not result in any new matrix items, but at least we need to be able to say that we have looked at the ER report and the petitioner's, you know, full set

of questions, et cetera.

DR. NETON: I -- I guess -- this question came up earlier, though, was SC&A tasked with doing a formal review of the evaluation report.

MR. GRIFFON: Yeah, maybe I missed that, Jim.

DR. MAURO: Yeah, that was one of the prob-- it's not a problem. We were asked to keep it -- to be a limited review and be -- in effect the way Greg described it is while we're reviewing the site profile, please take a look at the evaluation report and -- and give your perspective on which issues might be SECs. I think that we will need some official authorization by the Board to expand this into a foc-- let's call it a focused SEC petition review and -- and do the strata issue, perhaps look at and do a formal review of the evaluation report. I -- I think that's something that has to come from the Board.

MR. GIBSON: Mark and Wanda, we've discussed it here a little bit and since you guys weren't here obviously you weren't part of the conversation, but that's probably what I do when we report to the Board from the workgroups is ask them to -- ask the Board to task SC&A to

do the full site -- or SEC review.

MS. MUNN: I think that's appropriate for you to do, Mike.

MR. BERONJA: Yeah, you know --

MR. GRIFFON: I agree, yeah.

MR. BERONJA: One -- one other thing that we actually talked about at lunchtime today, that SC&A is going to try and do -- will try to do before next Tuesday is that -- I don't think we -- I don't think we knew that the Board hadn't taken action on the 1955 to 1958 period of the SEC report, so we're going to actually probably just in the form of a letter just summarize kind of our overall findings. I think what you'll see is that we were going to concur with those particular dates, but say that post-1958 we'll continue to review as part of the focused review if the additional years should be included. So we're going to try and get that done so that the Board can potentially take action on that next week.

MS. MUNN: Good luck, and that's great. Yeah.

MR. GIBSON: Okay, is there anything else? I don't -- I think it's going to be a little too early to try to set another date just yet, so

we'll --

MS. KLEA: This is Bonnie. I do have a couple of comments. I don't know if this is the right time.

MR. GIBSON: Yeah, go ahead, Bonnie.

MS. KLEA: See, first of all, I have a letter from Christine -- is it Branche? -- and my petition is -- has been referred to as for only monitored workers, and I'd like to have that be corrected. I have a letter dated August 14 from Christine Branche, and -- and this is -- you know, several references from NIOSH that my petition's only for the monitored workers, which is not true.

MR. GIBSON: Bonnie, it should be for monit-- monitored or those that should have been monitored, I believe, unless NIOSH has changed some opinion. But I -- probably just a typo but, Ted, will you see that --

MR. KATZ: Yeah, I'll look into it, Bonnie. I think whatever it is, it might be a misuse of words or something, but it certainly -- nothing -- nothing was excluded from your petition, so --

MS. KLEA: Okay, thank you. And then also I

was wondering when the transcript from today's meeting would be posted?

MR. KATZ: From today's --

UNIDENTIFIED: Tomorrow?

MR. KATZ: Bonnie, I -- I can't --

MS. KLEA: I hear laughing, who's laughing?

MR. KATZ: Well -- well, it's just -- people around the table were just laughing 'cause there's so many workgroup meetings and there's so many transcripts being worked on and only one can be done at a time that -- there's no -- no harm intended in laughter, but -- but I -- I can't tell you, Bonnie, when this workgroup meeting will be posted because, in general, we're trying to get workgroup meetings that are older than this done first posted. We're trying to do them in order except when there's a priority issue for a workgroup to be able to move forward and so on, so I can't -- I can't answer that to you.

MS. KLEA: Okay, do you -- do you record the meeting or do you have a transcriber there?

MR. KATZ: It's -- we have -- we have a transcriber and it is recorded.

MS. KLEA: Okay, thank you.

MR. KATZ: You're welcome.

MS. BEACH: Sorry for the laughter, Bonnie. I'm still waiting for my June meeting notes.

MR. GIBSON: If there's nothing else then, we'll just adjourn the meeting now.

MR. KATZ: And the meeting's adjourned. Thank you for attending.

(Whereupon, the meeting was adjourned at 3:10 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 August 26, 2008; 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 15th day of Sept., 2008.

_____

STEVEN RAY GREEN, CCR, CVR-CM, PNSC

CERTIFIED MERIT COURT REPORTER

CERTIFICATE NUMBER: A-2102