

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

+ + + + +

ADVISORY BOARD ON RADIATION AND  
WORKER HEALTH

+ + + + +

WORK GROUP ON SANTA SUSANA

+ + + + +

TUESDAY  
APRIL 20, 2010

+ + + + +

The Work Group convened in the Zurich Room of the Cincinnati Airport Marriott, 2395 Progress Drive, Hebron, Kentucky, at 9:30 a.m., Michael H. Gibson, Chairman, presiding.

PRESENT:

MICHAEL H. GIBSON, Chairman  
JOSIE BEACH, Member  
WANDA MUNN, Member  
PHILLIP SCHOFIELD, Member

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## ALSO PRESENT:

TED KATZ, Designated Federal Official  
NANCY ADAMS, NIOSH Contractor  
ISAF AL-NABULSI, DOE  
HANS BEHLING, SC&A  
GREGORY BERONJA, SC&A  
EMILY HOWELL, HHS  
LARA HUGHES, DCAS  
BONNIE KLEA  
JEFF KOTSCH, DOL  
JENNY LIN, HHS  
JOHN MAURO, SC&A  
JIM NETON, DCAS  
JOHN STIVER, SC&A

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

2 9:30 a.m.

3 MR. KATZ: Good morning everyone  
4 on the phone. This is Ted Katz.

5 MS. KLEA: Hi, this is Bonnie.

6 MR. KATZ: Hi, Bonnie. I'm the  
7 Designated Federal Official of the Advisory  
8 Board on Radiation and Worker Health. This is  
9 the Santa Susana Work Group. And we're going  
10 to get going here beginning, as usual, with  
11 roll call. We're going to start with the  
12 Board members in room, and please note your  
13 conflict of interest lack or lack thereof as  
14 we go around starting with the Board.

15 Mike.

16 CHAIRMAN GIBSON: Mike Gibson,  
17 Chair, no conflict.

18 MEMBER SCHOFIELD: Phil Schofield,  
19 Work Group member, no conflict.

20 MEMBER BEACH: Josie Beach, Work  
21 Group member, no conflict.

22 MR. KATZ: And Board members on

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1 the line.

2 MEMBER MUNN: Wanda Munn, Board  
3 member, Work Group member, no conflict.

4 MR. KATZ: Okay. And, Mark, do we  
5 have you?

6 (No response.)

7 No. Okay. And then NIOSH ORAU  
8 team in the room?

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

11 DR. HUGHES: Lara Hughes, NIOSH,  
12 no conflict.

13 MR. KATZ: And on the line, NIOSH  
14 ORAU team. Are you expecting any company?

15 (No response.)

16 And then in the room, SC&A.

17 MR. STIVER: John Stiver, SC&A, no  
18 conflict.

19 MR. BERONJA: Greg Beronja, SC&A,  
20 no conflict.

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

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

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1 conflict.

2 MR. KATZ: Welcome, John.

3 DR. BEHLING: Hans Behling, SC&A,  
4 no conflict.

5 MR. KATZ: Okay. Then federal  
6 officials or contractors and HHS, DOL, DOE in  
7 the room.

8 MS. LIN: Jenny Lin, HHS.

9 MR. KATZ: And on the line.

10 MS. ADAMS: Nancy Adams, NIOSH  
11 contractor.

12 MR. KATZ: No conflict.

13 MS. HOWELL: Emily Howell, HHS, no  
14 conflict.

15 MS. AL-NABULSI: Isaf Al-Nabulsi,  
16 DOE, no conflict.

17 MR. KOTSCH: Jeff Kotsch, DOL, no  
18 conflict.

19 MR. KATZ: Great. Welcome to all  
20 of you and then members of the public on the  
21 line.

22 MS. KLEA: Bonnie Klea.

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1 MR. KATZ: Welcome, Bonnie.

2 All right then. Mike has sent  
3 around an agenda late. I sent it to be put up  
4 on the NIOSH website but only this morning.  
5 So it may not be up yet. But Mike can run  
6 through what the day looks like and we'll get  
7 going.

8 CHAIRMAN GIBSON: Okay.

9 MR. KATZ: Thank you.

10 CHAIRMAN GIBSON: It's been a  
11 little over a year since our last meeting. So  
12 I thought what we'd do on the agenda is have  
13 an update from NIOSH about the things that  
14 have transpired since the last meeting. And  
15 then SC&A could give us their status and  
16 updates. Then later in the morning before  
17 lunch we can get into some of the unresolved  
18 and open issues that we previously had.

19 And then after lunch we could  
20 discuss some of the new issues that have come  
21 up since our last meeting, things that we may  
22 not have been working on. And then if there

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1 are any other items later in the afternoon, we  
2 could discuss those and get some actions and a  
3 path forward.

4 If there aren't any questions,  
5 I'll turn it over to NIOSH and just give us an  
6 update about -- brief scan on Santa Susana and  
7 what's gone on since our last meeting.

8 DR. NETON: Lara's going to lead  
9 that.

10 MR. KATZ: Could I just before we  
11 get on with that? Jeff's on the line, and I  
12 believe he's on their -- Jeff, are you  
13 planning to stay for the entire meeting or?

14 MR. KOTSCH: I'll try, but I have  
15 other commitments.

16 MR. KATZ: Okay. Because I know,  
17 Mike, you have an agenda item that's really  
18 germane for Jeff, right? So if we want to  
19 give him an idea of --

20 CHAIRMAN GIBSON: Which is just  
21 how the workers are tracked, is that?

22 MR. KATZ: Yes, your issue of --

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1                   CHAIRMAN GIBSON: I don't think it  
2 was not only -- just a DOL issue. It's also  
3 if you -- affect dose reconstruction model,  
4 but -- what NIOSH comes up with as far as how  
5 many hours that would affect your dose if you  
6 worked six days a week or a lot of overtime.

7                   MR. KATZ: Okay. Yes, but I'm  
8 just trying to cover so that we have Jeff for  
9 that discussion since part of your concern, I  
10 think, is how DOL is handling --

11                   CHAIRMAN GIBSON: How to track  
12 workers.

13 MR. KATZ: Track workers with --

14                   CHAIRMAN GIBSON: Okay, yes, we  
15 can --

16                   DR. NETON: I think the issue was  
17 -- was Area IV of Santa Susana only -- the  
18 only --were only workers in Area IV of Santa  
19 Susana -- could workers from other parts of  
20 the facility gain access to Area IV.

21                   CHAIRMAN GIBSON: Transferred in  
22 and out.

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1 DR. NETON: Right. Exactly.

2 CHAIRMAN GIBSON: And whether, you  
3 know there seemed to be some operations  
4 outside of Area IV that were radiological in  
5 nature.

6 DR. NETON: Right.

7 MR. KATZ: But so if we can book  
8 that for Jeff, and then he'll know when to be  
9 on the line and have the liberty to --

10 MR. STIVER: That would go on the  
11 outstanding issues that we need to discuss.  
12 That's one of the ones I wanted to talk about  
13 as well.

14 CHAIRMAN GIBSON: Okay.

15 MR. KATZ: Do you want to shoot  
16 for a time certain on that and then --

17 CHAIRMAN GIBSON: We've got it  
18 scheduled for 11:00 a.m.

19 MR. KATZ: Okay. So, Jeff?

20 MR. KOTSCH: Yes, I'll hang on, or  
21 if I drop off I'll come back on.

22 MR. KATZ: Okay. Great. Thank

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1 you. All right. Sorry for the interruption.

2 DR. HUGHES: Okay. So are we  
3 ready for the update?

4 The last Work Group meeting for  
5 Santa Susana was April 17, 2009. And I'm just  
6 going to list the efforts that NIOSH has -- or  
7 the things that NIOSH has done since then.  
8 During the last Work Group meeting, we  
9 discussed the Class Definition for SEC-00093,  
10 and based on the discussion during the last  
11 Work Group meeting, NIOSH went and revised its  
12 recommended Class for the SEC-00093 to  
13 encompass all DOE workers who worked in the  
14 area of Area IV from 1955 to 1958. This Class  
15 was presented to the Board, and the Board  
16 voted on and issued its recommendation on May  
17 19, 2009, and the Class became effective on  
18 July 18, 2009.

19 NIOSH did further research because  
20 the internal data for this site was an issue.

21 So NIOSH did further research into the  
22 feasibility of developing an internal coworker

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1 model to assess doses for unmonitored workers  
2 and dealt extensively with the site, did more  
3 data capture. And upon completion of that and  
4 assessing all the internal data that was  
5 available, come to the conclusion that there  
6 were some issues with the internal data in the  
7 years prior to 1964 -- 1965, excuse me.

8 And therefore NIOSH solicited  
9 another Petition for the site and issued or  
10 prepared an evaluation that is SEC-00156 in  
11 which NIOSH recommended an additional Class  
12 for Santa Susana workers, and this Class  
13 included all workers in Area IV of Santa  
14 Susana Field Laboratory from January 1, 1959  
15 through December 31, 1964. The Class was  
16 presented to the Board on February of this  
17 year, and the Board had issued a  
18 recommendation on March 5 of this year. And I  
19 believe the effective date for this Class will  
20 be May 5 of 2010.

21 Since Area IV has three related  
22 sites that -- sites that are in the vicinity

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1 of Area IV and were operated by the same  
2 company, NIOSH has also looked into SEC  
3 evaluations for these three sites. These  
4 sites are the Canoga Avenue facility, the  
5 Downey and the De Soto facilities.

6 NIOSH actually received an 83.13  
7 SEC Petition for the Canoga Avenue facility  
8 which was also completed and presented to the  
9 Board in February 2009. Upon some  
10 consultation with the Department of Labor,  
11 NIOSH has issued a revision to this report,  
12 and the Board finally voted on March 31, 2010  
13 to add the Class to the SEC for Canoga. And  
14 this Class will be all workers at the Canoga  
15 Avenue facility who worked from January 1,  
16 1955 through December 31, 1960 at this  
17 facility. This is the entire covered period  
18 for this facility.

19 In addition, NIOSH had completed  
20 two Petition Evaluations under paragraph 83.14  
21 for the De Soto and the Downey facilities, and  
22 those are currently scheduled to be presented

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1 to the Advisory Board during the May Board  
2 meeting -- the upcoming -- in 2010. That was  
3 the NIOSH focus was mainly since the last  
4 Board meeting, as you can see, was mostly on  
5 SECs, getting the SECs done, because that's  
6 the high priority issue.

7 As for TBD and other activities,  
8 NIOSH has also completed the external coworker  
9 model for Area IV and related sites. However,  
10 this is currently undergoing revision. The  
11 internal coworker model is still being  
12 developed. NIOSH has sent some detailed  
13 information on the database that is used for  
14 the internal coworker model to the Work Group  
15 because there were some outstanding questions  
16 from the last Board meeting.

17 NIOSH is also in the process of  
18 developing a White Paper on the NTA film  
19 issue, the neutron monitoring issue, which is  
20 currently under development and is actually in  
21 the completion stages. However, it has not  
22 completed issue resolution clearance before

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1 this meeting.

2 Also NIOSH, based on some  
3 questions that came up during the last Board  
4 meeting regarding site coverage, NIOSH had  
5 committed to looking into whether or not we  
6 could find any documents that would indicate  
7 that DOE nuclear work was performed in any  
8 other areas than Area IV. And NIOSH has  
9 completed a revision of its databases of all  
10 the documents that were collected during SEC  
11 and TBD research. But it has really located  
12 any kind of documents that would indicate that  
13 DOE related nuclear activities were carried  
14 out in these areas, and therefore nothing was  
15 submitted to the Department of Labor to  
16 reconsider anything because we haven't found  
17 any information.

18 Revisions to the internal, the  
19 external, and the environmental TBDS are in  
20 the completion stages. These revisions for  
21 now are to address the SECs to include SEC  
22 language to complete appending claims. We

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1 still need to address some of the other issues  
2 that need to be resolved.

3           During the last year, NIOSH did  
4 two data capture trips to the site and one  
5 data capture trip to the Federal Records  
6 Center. They were completed in September and  
7 November of 2009, and overall the site visit  
8 database now contains over 1,500 documents  
9 that are related to Santa Susana Field  
10 Laboratory and its related sites.

11           And NIOSH has also received four  
12 reports from SC&A. One was received in  
13 October 2009 which was a draft review of the  
14 Santa Susana Field Laboratory Special Exposure  
15 Cohort Petition and the NIOSH SEC Petition  
16 Evaluation Report. The second one was the  
17 review of the NIOSH Site Profile for the Santa  
18 Susana Field Laboratory with Attachment 1  
19 which included the site expert interviews  
20 which were conducted in 2008, I believe.  
21 NIOSH also received the draft White Paper  
22 which included the review of the database that

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1 was used to develop OTIB-0077, the external  
2 coworker model for Area IV, which was received  
3 March 8, 2010. And SC&A reissued a revision  
4 to this document which was received by NIOSH  
5 March 15, 2010.

6 That about brings us up to date  
7 with NIOSH efforts.

8 CHAIRMAN GIBSON: Okay. Do we  
9 have any questions of NIOSH, or do we want to  
10 just let SC&A give --

11 MR. STIVER: Well, I have a  
12 question.

13 MS. KLEA: This is Bonnie. Can I  
14 ask a question?

15 CHAIRMAN GIBSON: Go ahead.

16 MS. KLEA: Did Lara not receive  
17 the letter I sent that was dated 1996 from the  
18 Department of Energy, Mike Lopez to Boeing's  
19 Majelle Lee, listing three offsite areas where  
20 DOE did work and they were left contaminated  
21 which was Building 373, the old conservation  
22 yard, and the OMR, the organic moderated

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1 reactor in Building 9. Those were all offsite  
2 of Area IV, and they were DOE projects, and  
3 they left the property and the buildings  
4 contaminated.

5 DR. HUGHES: Yes, I did receive  
6 that document, and I looked at it. But if you  
7 look at the map of Area IV, these three  
8 facilities are included in Area IV. Now they  
9 are outside of what is called the DOE segment  
10 of Area IV. But since the entirety of Area IV  
11 is covered under this program, it is not an  
12 issue. I mean if you look at our TBDs, you  
13 actually see that these three facilities are  
14 discussed in our TBDs. So any worker who  
15 would have worked at any of these facilities  
16 would be covered under this program.

17 MS. KLEA: Okay. So you do have  
18 that memo that Laurie Breyer circulated?

19 DR. HUGHES: Yes.

20 MS. KLEA: Okay. Well, in 1996,  
21 they said it was outside of Area IV.

22 DR. HUGHES: No, it's outside the

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1 DOE portion of Area IV.

2 MS. KLEA: Okay.

3 DR. HUGHES: Not all of Area IV  
4 was DOE operations. Part of it was Rocketdyne  
5 or whatever the company was called in  
6 different periods. But as it's relevant for  
7 this program, DOL defines the site coverage by  
8 area. So Area IV is covered, not just the DOE  
9 area.

10 MS. KLEA: Okay. But from what  
11 I'd seen there's a very difficult time to  
12 distinguish when the areas were changed  
13 originally and the map I circulated at the  
14 last Board meeting. It was only the SRE in  
15 1956 and we're exactly not sure when the other  
16 areas were included in the DOE areas. We have  
17 trouble with the boundaries.

18 DR. HUGHES: Okay.

19 MS. KLEA: So in 1996 a letter was  
20 written, and the subject is Completion of  
21 Projects Outside of the DOE Area. So it's  
22 been the assumption that all of Area IV is the

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1 DOE area.

2 DR. HUGHES: No, not all. Area IV  
3 is larger than just the DOE area actually. If  
4 you look at the maps, and there's one in our  
5 TBD. There are several maps out there that  
6 are from historic documents like the Sapere  
7 and Boeing document, the site assessment. All  
8 I can say to this is that these three  
9 facilities that are listed would be covered  
10 under Area IV, and we've discussed them in the  
11 Site Profile.

12 MS. KLEA: Okay. Now I don't know  
13 if it's an issue you're going to bring up now  
14 or later. But there are huge gaps of data  
15 missing for the worker claims coming from  
16 Boeing. They don't know where the workers  
17 were because according to the UCLA report they  
18 only had two places to clock in, only two time  
19 clocks for 400 buildings on the hill.

20 And when Boeing was asked for the  
21 key to their code system, some years they used  
22 a two-digit number, some years they used a

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1 three-digit number. And Boeing has no code  
2 for where those numbers went. And so I have  
3 dozens of claims here that show delinked  
4 spaces for the time periods that the worker  
5 worked.

6 DR. HUGHES: I guess that would be  
7 more an issue that DOL would deal with.

8 MS. KLEA: Okay.

9 DR. HUGHES: Regarding the  
10 verification.

11 MS. KLEA: Okay. And this is all  
12 pointed out in the UCLA report, and Laurie  
13 Breyer verified that you all have access to  
14 that UCLA report. So I've gone through it,  
15 and I have page number if you want any of  
16 these details.

17 DR. HUGHES: I'm familiar with the  
18 report.

19 MS. KLEA: Well, you quoted from  
20 it. You quoted from it that there was  
21 adequate internal monitoring records. And  
22 according to the UCLA report there was

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1       inadequate internal monitoring records. No  
2       worker locations were known because they used  
3       a code. And I asked Laurie if you have that  
4       UCLA report at your disposal. This was a  
5       worker desk study that was done at UCLA.

6                   DR. HUGHES:     Yes, I'm familiar  
7       with the report. And I'm not sure that the  
8       report discusses inadequacy of internal data  
9       because the whole conclusion of the report is  
10      based on their analysis of the internal data  
11      that was collected. I cannot really say much  
12      to their attempts trying to place worker in  
13      certain areas or the issue with the time clock  
14      location. That's not really something we look  
15      at.

16                   MS. KLEA:     Well, don't you need  
17      worker location as well as internal monitoring  
18      to do the coworker model?

19                   DR. NETON:     No.     This is Jim  
20      Neton. Bonnie, the coworker model is more  
21      general than that. We would take the total  
22      distribution of all the workers that were

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1 monitored for internal exposure and select  
2 either the 50th or the 95th percentile of that  
3 entire distribution and apply it to a worker.

4           It's been our experience at many  
5 of these sites that you can't get down to a  
6 level of knowledge of where and when the  
7 workers were. It's just not possible. In  
8 this way, say for instance, if a worker was --  
9 clearly appeared to have worked in a job that  
10 needed to be monitored was exposed, they would  
11 receive the 95th percentile of the values that  
12 were observed in the entire population.

13           MS. KLEA: Okay.

14           DR. NETON: That's how we approach  
15 that issue.

16           MS. KLEA: Okay. Well, you need  
17 to look at that UCLA report. I think Lara has  
18 quoted some of what's in it, and it says that  
19 the internal monitoring peaked in '63 and '64  
20 and then it fell off sharply. Instead of  
21 doing it per incident or per week, they did it  
22 only once a quarter, and many of the workers

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1 had -- there were no birth dates, no Social  
2 Security numbers, and the personnel records  
3 were not found to go with the monitoring  
4 numbers.

5 DR. NETON: Right. One thing we  
6 need to keep in perspective here is the  
7 difference between the endpoint of an  
8 epidemiological study which I think is what  
9 you're looking at --

10 MS. KLEA: Yes.

11 DR. NETON: -- versus dose  
12 reconstruction for purposes of compensation.  
13 We tend to allow for much larger exposures to  
14 be claimant favorable when data are missing  
15 when that wouldn't be appropriate in an  
16 epidemiologic study.

17 MS. KLEA: Okay.

18 MR. KATZ: Thank you, Bonnie.

19 MR. STIVER: This is John Stiver  
20 from SC&A. Lara, I have a couple of questions  
21 about your presentation.

22 For the Canoga Avenue facility, I

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1 was not present in the February full Board  
2 meeting, but I read the transcript recently.  
3 Apparently the original class was for the  
4 Vanowen Building only. And the reason for the  
5 expansion, was that because Labor was unable  
6 to identify whether personnel were indeed  
7 assigned to Vanowen or were just coming and  
8 going without some kind of access control?  
9 What's the real purpose for that? I didn't  
10 quite come away with an understanding of that.

11 DR. HUGHES: Yes, the research  
12 indicated that the nuclear operations took  
13 place in this one building at the site, the  
14 Vanowen Building. And logically you would  
15 think that only the workers in that building  
16 would be exposed since there was no evidence  
17 of large releases to the environment.  
18 However, upon discussion with the petitioner  
19 as well as the Department of Labor, the  
20 Department of Labor had problems putting  
21 people in the Vanowen Building.

22 Now the records we received from

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1 the site, we were under the impression it  
2 would be possible. But as the Department of  
3 Labor had pointed out, they not just only need  
4 to place the worker in a particular building.

5 They also need to verify 250 days of  
6 employment, and it just gets very difficult.

7 In addition to that, the  
8 petitioner who had worked at the site for a  
9 very long time was very adamant that access  
10 restrictions were not enforced.

11 MR. STIVER: Yes, I remember that.

12 DR. HUGHES: So there was some  
13 conflicting information versus some people  
14 being interviewed saying, yes, you could only  
15 get in if you had a certain badge. And some  
16 people would say, no, you could get in if they  
17 needed somebody to help you out. So in order  
18 to be claimant favorable, there just wasn't a  
19 good --

20 MR. STIVER: Do you know what  
21 proportion of the workers were or thought to  
22 have been assigned to Vanowen as opposed to

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1 the entire facility?

2 DR. HUGHES: Do you mean numbers?

3 MR. STIVER: Yes. What percentage  
4 were actual Vanowen --

5 DR. HUGHES: I don't know. The  
6 site was probably about -- and I don't want to  
7 say anything wrong. I would estimate about 30  
8 percent of the entire site.

9 MR. STIVER: About 30 percent?

10 DR. HUGHES: But I really don't  
11 have any worker numbers.

12 MR. STIVER: Okay.

13 DR. NETON: It was a very large  
14 building though.

15 MR. STIVER: Yes.

16 DR. HUGHES: Yes, it's a large  
17 building.

18 MR. STIVER: Okay. And also for  
19 the Downey and De Soto facilities, what -- I  
20 realize Downey was the -- from 1948 to '55 I  
21 believe was when the operations were going on  
22 there before it was moved over -- to Canoga,

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1 so I would assume it's just a paucity of  
2 internal monitoring data or inadequate  
3 external and internal data that was the basis  
4 for that petition.

5 DR. HUGHES: The findings haven't  
6 been presented to the Board yet. So I don't  
7 know, can we talk about it here?

8 MR. STIVER: Well, I know there's  
9 been -- you've had an Evaluation Report.

10 DR. HUGHES: I mean essentially,  
11 yes. I mean since the data are between those  
12 four sites we're looking at one large clump of  
13 data.

14 MR. STIVER: So De Soto would be  
15 kind of parallel to what was done for Area IV  
16 because of the missing positive bioassay data  
17 of this report.

18 DR. HUGHES: That's correct.

19 MR. STIVER: Okay. And then I  
20 guess the last thing was you mentioned that  
21 you'd done some TBD updates, but they were  
22 mainly just to put in the SEC language. Are

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1 you going to defer modification of the TBDs  
2 until after the SEC is settled? Because at  
3 our last meeting I remember there were a lot  
4 of outstanding issues related to TBDs and  
5 environmental data collection and things of  
6 that nature, incidents.

7 Is that going to then be subsumed  
8 into the coworker models? Or will there be  
9 some attempt to also do reconstruction based  
10 for those without monitoring using those TBDs?

11 I'm not quite sure how that's going to work.

12 DR. NETON: I'm not sure of your  
13 question. There are two issues now. One is  
14 the site is SEC through 1964. So are you  
15 asking are we planning on trying to use  
16 environmental data to do partial dose  
17 reconstruction prior to '64?

18 MR. STIVER: Say -- yes, for those  
19 personnel who don't classify, don't qualify,  
20 for the SEC.

21 DR. NETON: Right.

22 MR. STIVER: Would you then apply

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1 -- just not do any internal dose assessment at  
2 all for them? Or would you do a partial  
3 reconstruction with an environmental internal  
4 component to it because the basis for the SEC  
5 was a lack of occupational monitoring?

6 DR. NETON: Right. Based on what  
7 we've done in the past, I would suspect we  
8 will end up with a partial dose reconstruction  
9 using environmental models.

10 MR. STIVER: Okay. So that -- the  
11 environmental models then still are --

12 DR. NETON: They're still being  
13 evaluated.

14 MR. STIVER: Okay.

15 DR. NETON: Now it's possible that  
16 we would end up in a situation prior to '64  
17 where maybe a reasonable environmental model  
18 couldn't be constructed. We're not there yet.

19 MR. STIVER: Okay. That's still  
20 in the works then.

21 DR. NETON: Yes, we'll do  
22 everything we can.

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1 MS. KLEA: This is Bonnie. I just  
2 have a comment to make on the environmental  
3 monitoring. It's my understanding that all of  
4 the samples from the environment were  
5 incinerated before they were measured, thereby  
6 burning off all the volatiles. Now is that  
7 what you're talking about for environmental  
8 data?

9 DR. NETON: I'm not sure. I  
10 haven't looked at that personally recently.  
11 But we have environmental air samples that  
12 were taken that were measured to quantify the  
13 values. I don't recall samples being  
14 incinerated to drive off volatiles.

15 MS. KLEA: That was pointed out by  
16 Greg Dempsey from EPA that they improperly  
17 monitored or they improperly measured their  
18 environmental samples by incinerating them  
19 thereby lowering the numbers. And then also  
20 the air monitoring was improperly placed, and  
21 that's pointed out in the Tiger Team report.  
22 The air samplers were put up on a building

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1 where they received the air flow only five  
2 percent of the time.

3 MR. STIVER: Bonnie, this is John  
4 Stiver at SC&A. We're actually going to go  
5 into these issues a little later.

6 MS. KLEA: Okay.

7 MR. STIVER: So maybe that would  
8 be the time to discuss that.

9 MS. KLEA: All right. Thank you.

10 MR. STIVER: I think maybe this  
11 incineration might have to do with ashing a  
12 filter in order to perform radio-chemistry on  
13 it. So that may be taken out of context  
14 somewhat.

15 MS. KLEA: Okay.

16 MR. STIVER: But that's really all  
17 I had as far as questions about your  
18 presentation. As far as SC&A is concerned and  
19 in the last year, we really had kind of a  
20 minimal role in the SSFL SEC process. We  
21 produced one document which is the review of  
22 the external coworker model and more

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1       importantly the database that underlies that  
2       model. In addition, Lara showed that we had  
3       presented updates. We produced updates to the  
4       -- we had originally done the Petition  
5       Evaluation Report as a paper study, and we  
6       produced the final report for that although  
7       the paper study was about 95 percent complete.

8       And then the addition of the expert  
9       interviews was also added as an appendix to  
10      the Site Profile.

11                 But the real important piece of  
12      work that we performed was the -- Hans  
13      Behling's review of the database underlying  
14      the external coworker model. And there are  
15      about five fairly important deficiencies that  
16      were identified regarding that model which are  
17      going to be a point of detail discussion later  
18      on during this meeting.

19                 But before we really go into all  
20      these details and descriptions of issues and  
21      things, what I would like to do is kind of go  
22      straight to the chase here and describe SC&A's

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1 position, our stance, on the SEC and the  
2 reasons for that position. And essentially  
3 there are positive elements, and there's  
4 negative elements. Basically, we have good  
5 news and bad news.

6           The good news is that, as you  
7 recall, last year in our meeting we were not  
8 comfortable with the 1958 cutoff date for the  
9 SEC based principally on our impressions that  
10 this was a bioassay program in its infancy  
11 beginning in 1958. And it was ramping up  
12 obviously in parallel with reactor operations  
13 and nuclear activities. But you see a  
14 proportional increase in the fraction  
15 monitored.

16           And there may well have also been  
17 an increase in the absolute numbers. So we  
18 were kind of concerned about data completeness  
19 issues as well as accuracy issues. Now the  
20 1964 cutoff date resolves our concerns about  
21 those monitoring data, and we're comfortable  
22 with that.

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1                   Now looking at the bad news, as I  
2                   said, there are several unresolved Site  
3                   Profile issues that we feel that if they're  
4                   not resolved could impact the SEC. And these  
5                   relate exclusively to our review of the Boeing  
6                   or the Boice database that underlies the  
7                   external coworker model.

8                   Our review of that model found  
9                   that while it was technically appropriate for  
10                  use in an epidemiological mortality study, we  
11                  feel that in its current state it's not  
12                  suitable for an external coworker model. As I  
13                  said, we identified five major deficiencies,  
14                  and Hans Behling is going to go through those  
15                  in detail later today.

16                  However, there is a silver lining  
17                  here. We feel that those corrections to the  
18                  use of the data for the external model should  
19                  be fairly straightforward to implement. So  
20                  it's an SEC issue now, but it's a Site Profile  
21                  issue as far as the mechanics of fixing the  
22                  model.

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1           However, we do have a wrinkle  
2           there, and that's our concern as to whether or  
3           not the deficiencies that we identified for  
4           the external coworker model might indeed apply  
5           to the internal coworker model to some extent.

6           And we understand that in  
7           principle an internal coworker model could be  
8           built given an adequate data set. But it's  
9           not available. We haven't seen it yet.

10          So I guess in summary before we  
11          could be comfortable signing off on this there  
12          are two things we'd really like to see. We'd  
13          like to see that the external model is using  
14          the data in a suitable manner. And we'd like  
15          to have some proof of principle that the Boice  
16          data are indeed suitable for the internal  
17          coworker model.

18          At this point, we've not been  
19          asked to review the internal coworker model or  
20          the data set that forms the basis for that  
21          model. However, we would be happy to do so if  
22          the Board wants us to. And that's really our

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1 position on this right now. And as I said  
2 we're going to go into the details of those  
3 findings later today.

4 But that really kind of lays it  
5 out. Once those findings are addressed I  
6 think that we'll be in a good position to be  
7 comfortable in providing a final decision on  
8 that. Any comments? Questions?

9 MS. KLEA: This is Bonnie. I have  
10 a comment. I've been complaining about the  
11 use of the Boice study since the beginning of  
12 my involvement. We have the UCLA worker study  
13 that I have a copy in front of me. It was  
14 published in 1997 and Robert Rinsky from NIOSH  
15 participated in the UCLA worker desk study.  
16 The Boice study was paid for by Boeing.  
17 Boeing picked the doctors and the panel and  
18 paid for that study. And now you're using  
19 that study instead of the one that NIOSH  
20 themselves worked on.

21 DR. HUGHES: Well, the issue is  
22 that NIOSH doesn't actually use any study.

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1 NIOSH uses the data that was collected during  
2 the study, and the large difference is that  
3 the Boice study scanned all the data and made  
4 it available in a database versus the UCLA  
5 study did not. Or either way, it was not  
6 available to NIOSH to get the data from that  
7 study. Also the Boice study was done later,  
8 so it includes a larger amount of data.

9 That was the only reason. NIOSH  
10 does not use any conclusion from the Boice  
11 study or the UCLA study. So all we're  
12 actually looking at is the data that was  
13 scanned from the site. And the only reason  
14 those studies are involved is that NIOSH  
15 doesn't really want to redo this effort of  
16 scanning all the worker records because that's  
17 a tremendous effort to do. And the databases  
18 were available for NIOSH to use.

19 MS. KLEA: Okay. I understand.

20 CHAIRMAN GIBSON: So does SC&A  
21 think that data was adequate or --

22 MR. STIVER: Well, that's what

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1 we're going to get into later on this  
2 afternoon. You know, we're kind of ahead of  
3 ourselves on the schedule. So maybe we could  
4 compress this a little bit.

5           What I'd like to do really before  
6 we go into the detailed discussion of those  
7 issues, there is some housekeeping that we  
8 need to address from last year's meeting.  
9 There are some outstanding issues that were --  
10 actually, there are really seven action items  
11 that were assigned to NIOSH, and each of those  
12 action items subsumes one or more of the  
13 outstanding issues in the issues matrix.

14           I would kind of like to go through  
15 these if that's okay with the rest of the  
16 group. It shouldn't take long to go through  
17 them because some of these are resolved in our  
18 minds based on NIOSH's responses in the issues  
19 matrix and on the discussions we've had today.

20           And several of them are really kind of -- can  
21 be grouped under these umbrella issues of the  
22 internal and external coworker models.

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1           If you'd like, I've provided you  
2 all with a status report. It's about a five  
3 pager here. It's entitled The Status Report:  
4 Review of the Santa Susana Field Laboratory  
5 Site Profile et cetera, et cetera, et cetera.

6       If you go about halfway down on page one,  
7 you'll see -- you might want to take -- for  
8 those of you who are interested in the chapter  
9 and verse, in this list of the issues, I have  
10 also identified which item in the issues  
11 matrix is related to that particular action  
12 item.

13           If you want to, you can follow  
14 along. I provided the issues matrix mainly as  
15 a reference that really gets into the nitty-  
16 gritty details of the basis for some of these  
17 decisions. But it's not absolutely necessary  
18 to use that if you choose not to.

19           The first action item involved the  
20 start date for nuclear activities.

21           MEMBER BEACH: John, before you  
22 start.

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1 MR. STIVER: Yes.

2 MEMBER BEACH: Which issues matrix  
3 date are you referring to?

4 MR. STIVER: I'm referring to the  
5 redacted version that I handed to John to  
6 email it out --

7 MEMBER BEACH: April 29th.

8 MR. STIVER: -- updated version.

9 MEMBER BEACH: Thank you.

10 MR. STIVER: It should be --

11 MEMBER BEACH: I have it. I just  
12 -- I have three.

13 MR. STIVER: There's a redacted  
14 version that was handed out.

15 MEMBER BEACH: Yes.

16 MR. STIVER: This is the version  
17 that I'm working from.

18 MEMBER BEACH: Okay. Thank you.

19 MR. STIVER: And item 9, getting  
20 back to this, this related to the start date  
21 for nuclear activities. And there was some  
22 concern as to whether the Atomic International

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1 sites were operating nuclear activities in  
2 1953 or 1955. And so there was an action item  
3 for NIOSH to establish the start date. NIOSH  
4 has provided detailed historical information  
5 from the reference Lara mentioned, Sapere and  
6 Boeing in 2005. And a review of that shows  
7 that pre 1955 there was really no nuclear  
8 activities. I believe it was the KEWB and the  
9 SRE were the first two projects to come  
10 online, and those weren't operational until, I  
11 believe, '56 and '57.

12 So this 1955 cutoff -- start date  
13 seems to be a valid start date. And as far as  
14 we're concerned, that issue is resolved. We  
15 don't have any problem.

16 DR. NETON: 1965?

17 MR. STIVER: No, '55.

18 DR. NETON: '55.

19 MR. STIVER: This was for the Area  
20 IV. Let me back up. These were all related  
21 to the Area IV SEC. So there was some concern  
22 as to whether activities might have started in

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1 '53 as opposed to '55. So we're comfortable  
2 with that 1955 start date. That's no longer  
3 an issue with us.

4 The second action item related to  
5 the Sodium Reactor Experiment and the incident  
6 that occurred in 1959. That action item was a  
7 contractor who was supposed to perform an  
8 independent review of different release  
9 estimates. Evidently, there were vastly  
10 different release estimates, one provided by  
11 the company itself, and another provided by an  
12 outside contractor.

13 So there was going to be an  
14 independent review to determine the most  
15 scientifically defensible release scenario and  
16 the extent and necessity of an exposure model  
17 for onsite workers. And the TBD was to be  
18 revised to obtain additional detail of the  
19 incident and so forth.

20 Our position on this, at least our  
21 understanding is that due to the expansion of  
22 the SEC to 1964 that this issue is moot. The

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1 SRE incident will be subsumed into the  
2 internal coworker model. Now I assume this is  
3 all in line, that it's going to be added to  
4 May 5th for Area IV for SEC-00156.

5 DR. HUGHES: Yes. The workers  
6 that were on site will be included in the new  
7 SEC Class.

8 MR. STIVER: Okay. So I guess our  
9 concern or just to bring us up to speed then,  
10 is this independent review still on line.  
11 It's not going to be done then?

12 DR. HUGHES: No.

13 MR. STIVER: Okay. All right. I  
14 guess for the external component it would be  
15 nothing more than a dispersed krypton-85, and  
16 you guys already did a --

17 DR. NETON: The coworker model for  
18 external --

19 MR. STIVER: Yes. Right. So we  
20 already have that.

21 DR. NETON: I assume we can come  
22 to an agreement on that.

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1 MR. STIVER: Yes.

2 DR. NETON: That takes care of  
3 that.

4 MR. STIVER: Okay. So I guess in  
5 our minds then that issue is resolved as well  
6 given the SEC extension.

7 The third was NIOSH is to produce  
8 a complete and internal coworker model that  
9 encompasses certain accidental exposures. One  
10 of them that was the topic of discussion was  
11 the sodium burn pit, potential for releases  
12 during those activities. Evidently, the  
13 coworker model is still under development. As  
14 we said, we have not seen it, and we haven't  
15 been asked to review it or the underlying  
16 data.

17 Do you have an idea or an  
18 estimated date when that may be available?

19 DR. HUGHES: It's still in the  
20 process of the data being analyzed and the  
21 development of exposure models.

22 MR. STIVER: Is it? Okay.

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1 DR. HUGHES: So it will be a few  
2 more months.

3 MR. STIVER: A few more months,  
4 you think.

5 DR. HUGHES: Yes.

6 DR. NETON: Yes. If you look at -  
7 - Lara put out a little summary why we believe  
8 that the data prior to '64 or after '64 might  
9 be useful. And a lot of work went on looking  
10 at that database to essentially clean the  
11 numbers. There was issues with plus signs.

12 MR. STIVER: Yes. And the McBee  
13 cards.

14 DR. NETON: And the McBee cards.  
15 But I think at the end of the day there ended  
16 up being something like 40,000 measurements,  
17 most of which are valid.

18 MR. STIVER: Right. Again,  
19 looking at that report, you said that you  
20 tried to get the identified version from  
21 Boeing but were not successful in doing that.

22 Does that data actually exist, or is it that

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1 they're not willing to provide it, or is it no  
2 longer available?

3 DR. HUGHES: As far as we know,  
4 Boeing owns the data on the server on which it  
5 was stored, but it's not available because of  
6 --

7 MR. STIVER: Because it seems if  
8 you could get that, that would certainly  
9 resolve the issue of those missing positives.

10 DR. HUGHES: Yes.

11 MR. STIVER: To be able to  
12 identify those workers.

13 MS. KLEA: That was one of my  
14 questions. I had two. So privacy concerns,  
15 is that --

16 DR. NETON: I'm not sure why  
17 Boeing wouldn't release the data. But the  
18 missing positives were prior of '64.

19 MR. STIVER: Yes, '61 through '64.

20 DR. NETON: Well, after '64, this  
21 issue is not an issue. So you have the  
22 identified data that's really not that

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1 critical for us at this point. And you have a  
2 coworker model that is a generic distribution  
3 of all the monitored workers. Individual job  
4 categories are not critical. It would be nice  
5 to have it.

6 MR. STIVER: It would be nice to  
7 have it, yes.

8 MS. KLEA: Hi, this is Bonnie. On  
9 the burn pit, I understand there are no  
10 records. They kept no log books. And that  
11 burn pit, I think, was burning until about  
12 1977.

13 MR. STIVER: Bonnie, this is John  
14 Stiver. I think that coworker model they're  
15 proposing, like I said, they're going to take  
16 that database and use it to generate a  
17 distribution and then assign doses to  
18 claimants based on proportions of that  
19 distribution to the 50th and the 95th  
20 percentiles.

21 MS. KLEA: Okay. If you have --

22 MR. STIVER: So it's not really

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1 necessary to model --

2 MS. KLEA: -- an examination still  
3 in that burn pit, right?

4 MR. STIVER: Yes. So it wouldn't  
5 be necessary to actually try to model exactly  
6 what took place in the burn pit like you might  
7 have to do for a dose reconstruction if you  
8 didn't have monitoring. So that's the beauty  
9 of using a coworker model. You have that  
10 actual monitoring data. You have  
11 measurements.

12 MS. KLEA: Okay.

13 MR. STIVER: That you can then use  
14 to generate the distribution and the assigned  
15 doses and be fairly comfortable that you're  
16 being claimant favorable. Because otherwise  
17 sometimes especially looking at these records  
18 with respect to reconstruction, you just don't  
19 often times have the data in a reliable form  
20 or to the extent that you need to actually do  
21 an accurate reconstruction.

22 DR. NETON: Actually, our

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1 experience has been even when you have worker  
2 titles and job categories, oftentimes they're  
3 not accurate.

4 MR. STIVER: Yes.

5 DR. NETON: People change jobs,  
6 and the human resource database might not have  
7 been updated or --

8 MR. STIVER: Yes. You know, in  
9 the DTRA world when I was doing atomic  
10 veterans reconstructions, we had those  
11 problems all the time. There were issues with  
12 dosimetry. There were issues with  
13 measurements. And then you know the actual  
14 demographic data was oftentimes suspect.

15 If there are no other questions,  
16 I'd like to move on to issue item number four  
17 which was the tritium plume. This relates to  
18 items three and 12.2 in the issues matrix.  
19 This was one aspect of the environmental  
20 exposures where workers may have been exposed  
21 to drinking water that was contaminated with  
22 tritium from the SNAP reactors in Building

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1 4010. And NIOSH was to prepare a White Paper  
2 describing the model and the base data used to  
3 estimate worker intakes of that, potential  
4 intakes from drinking contaminated water.

5 The information on the tritium  
6 plume has instead been included in the issues  
7 matrix, based on more recent well monitoring  
8 data in the 2007 ASER report and the arguments  
9 put forth by NIOSH in the issue matrix.

10 We believe this issue was  
11 resolved. Basically, we feel that using that  
12 well, I think it was RD 34 which is down  
13 gradient from the presumed site of  
14 contamination and their various parameters and  
15 model estimates, we feel that that is  
16 sufficiently claimant favorable. And we  
17 believe that this issue is resolved. We have  
18 no problems with that.

19 Another thing to bring up is that  
20 even if you're drinking water that's  
21 contaminated with tens of thousands of  
22 picocuries per liter, you're still going to

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1 just end up with millirem of doses at the end  
2 of the year. So if they're small doses, it  
3 sounds like a major event. But it's not as  
4 important from a dosimetric standpoint as you  
5 might initially assume.

6 MS. KLEA: This is Bonnie again.  
7 I would like to add another side on that  
8 tritium. It was found in the soil around  
9 Building 59 also. And then in 1965 when SNAP-  
10 8ER shut down, there was a large release of  
11 fission products from that Building 10 plus  
12 tritium. And it was in the soil around  
13 Building 59.

14 MR. STIVER: Something to keep in  
15 mind though is that tritium is basically an  
16 activation product. So it's going to be  
17 produced by neutron activation, and you can  
18 find it in the vicinity of the reactors in the  
19 soil. And basically it's going to be a  
20 component of the soil water.

21 MS. KLEA: Right.

22 MR. STIVER: And that's the issue

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1 with movement of a plume into the drinking  
2 water supply. And there's also the idea that  
3 you've got to keep in mind is that you're  
4 looking at the surface levels of water.  
5 You're looking at an aquifer that's probably  
6 physically separate from the drinking water  
7 aquifers that are quite a bit lower.

8 MS. KLEA: Who's talking?

9 MR. STIVER: This is John Stiver  
10 at SC&A.

11 MS. KLEA: Okay.

12 MR. STIVER: So you have a very --  
13 even if there is contamination which has been  
14 identified, the likelihood of that getting  
15 into the drinking water supply is very remote  
16 based on the fact that you have discontinuous  
17 aquifers, meaning they're not connected.

18 MS. KLEA: Right. Well, that's an  
19 assumption, and we don't really know because  
20 they didn't even look for it until 1989 when  
21 EPA found it.

22 MR. STIVER: Yes. But I believe

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1 the model that they plan to use in conjunction  
2 with the external and internal coworker models  
3 will provide sufficiently claimant favorable  
4 doses to claimants.

5 NIOSH, would you like to add  
6 anything to that?

7 DR. HUGHES: No.

8 DR. NETON: No.

9 MR. STIVER: Okay. I'll move onto  
10 item number five. This was the lack of  
11 information on the environmental exposures.  
12 This is item number 12 in the issues matrix  
13 and is also related to item five, which is the  
14 issue of air sampling data.

15 The charge was, NIOSH was to  
16 reevaluate the current approach of back-  
17 extrapolating stack emission data collected  
18 from 1971 to '99 to earlier periods. And our  
19 main concern there was there would be an  
20 underestimation of stack emissions for the  
21 earlier years when we know that more nuclear  
22 operations were taking place. Where in the

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1 '70s essentially all the reactor operations  
2 were ceased and other nuclear activities were  
3 ramping down. So you have the situation where  
4 you're taking data where there's a smaller  
5 release and then extrapolating that to an  
6 earlier time when you know there was more. So  
7 you have the potential for underestimating  
8 doses from those types of models.

9 And in the transcript, I know Jim  
10 talked extensively about your concerns with  
11 using that approach and you were looking into  
12 other methodologies to address that. Can you  
13 provide us an update on the status of that?

14 DR. NETON: Unfortunately, we  
15 don't have much to update. That's just still  
16 in progress.

17 MR. STIVER: It's still in  
18 progress. Okay.

19 Numbers six and seven both relate  
20 to the external dose coworker model. Number  
21 six was that NIOSH was to prepare that model  
22 and release it for use or at least for review.

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1       That was indeed done in August of 2009, and  
2       I'm going to defer discussion of that to  
3       Hans's discussion of the coworker model.

4               Also subsumed into the external  
5       coworker model issue is the idea of neutron  
6       dose methodology. This was our concern about  
7       the absence of empirical data involving  
8       neutron spectra for reactors and plutonium  
9       fuel storage facilities. I know you had some  
10      data from Hanford that you felt was fairly  
11      representative of the types of reactors that  
12      were in use at Santa Susana that might be  
13      useful for characterizing that.

14              There was the concern about  
15      dosimetry calibration methods and another big  
16      one is the relative insensitivity of the NTA  
17      film for neutrons with energies less than 500  
18      KeV. And you have indicated that you're  
19      preparing a White Paper on the NTA film issue.

20              DR. NETON: Yes.

21              MR. STIVER: Do you have any idea  
22      when that's --

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1 DR. NETON: We're talking and deep  
2 in generalities about what we found. It's not  
3 ready for release.

4 MR. STIVER: It's not ready for  
5 release yet? Are you prepared to talk about  
6 that at all?

7 DR. NETON: Yes, to some -- I mean  
8 to what we can in general terms.

9 MR. STIVER: Okay.

10 DR. MAURO: This is John Mauro.  
11 For Jim and I guess maybe John also, I have  
12 just a question in listening to the overviews.  
13 I try to key in on the issues that are on the  
14 table that are under consideration and which  
15 ones of those might affect the boundary of  
16 this 1964 end of the SEC period. And correct  
17 me if I'm wrong.

18 Certainly, we'll be talking a lot  
19 of issues that clearly are going to be Site  
20 Profile issues. However, it's not always  
21 clear which of these Site Profile issues might  
22 really have an impact or may be relevant to

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1 the 1964 date, which means that they become an  
2 SEC issue.

3           And what I heard, and I think it's  
4 important that we all sort of are on the same  
5 page, is that there is an external coworker  
6 model that we have some concerns with. We'll  
7 hear about that more. There is in development  
8 an internal coworker model that eventually we  
9 will have a chance to look at. Both of which  
10 are models which argue to the fact that, yes,  
11 for external exposure and the argument be made  
12 by NIOSH is, yes, we can reconstruct external  
13 exposures using these data and then building a  
14 coworker model. We'll talk about some of the  
15 problems.

16           But in theory one could argue that  
17 -- is there any way that problems with the  
18 coworker model -- and I guess this is to be  
19 discussed as we work through it later -- could  
20 in fact have an effect on whether or not that  
21 boundary '64 is sound. The same kind of  
22 concern in my mind is whether the boundary in

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1 '64 may be at risk if there are similar  
2 problems with the internal coworker model.

3 And the third piece is that I  
4 heard some discussion just now regarding  
5 airborne emissions in the '70s that were  
6 measured and then back-extrapolating those  
7 airborne emissions to earlier dates. I guess  
8 these airborne emissions go toward  
9 environmental exposures to outdoor exposures  
10 to workers who I presume it goes toward both  
11 external and internal exposures.

12 And my question is, that's another  
13 way to go back in time and reconstruct  
14 exposures. And, again, until, I guess, that  
15 issue is dealt with, is it possible that that  
16 has some bearing on 1964. So I guess I'd like  
17 to hear a little feedback on the degree to  
18 which -- see, in my mind, this is the key  
19 here.

20 Right now, we are at a place where  
21 1964 is being, the end of '64 is being  
22 proposed, recommended, as being the date for

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1 when the SEC period ends, the end of '64. And  
2 I think that it's very important that we all  
3 are very clear on what issues are at play here  
4 that bear on that. And I guess I haven't  
5 really heard a clear definition of where that  
6 is.

7 And we all know that there are  
8 certainly lots of Site Profile issues and  
9 we'll be talking about them. But I'd like to  
10 hear, almost to round this up, what we just  
11 discussed, where does -- I'd like to hear a  
12 little bit where some of the things that we  
13 just summarized might have play on the date.

14 MR. STIVER: John, this is John  
15 Stiver. I think the external coworker model  
16 and the validity of that model and the way  
17 that data is being used is really the crux of  
18 the issue here. If NIOSH can demonstrate that  
19 they're using that data in an appropriate  
20 manner, then that coworker model can be used  
21 to recreate doses for post-SEC period, post  
22 1964, and also for claimants that don't

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1     qualify for the SEC for partial dose  
2     reconstructions for the earlier years.

3             Now this is one thing that's  
4     always kind of confused me a bit is, is that  
5     coworker model indeed inclusive of all,  
6     considered to be inclusive of all, of  
7     exposures for the claimant or are there in  
8     addition to that environmental exposures that  
9     would also have to be calculated based on how  
10    that SEC Class was defined? I'm still not  
11    quite sure how that would work. In that case,  
12    then these environmental exposures really do  
13    come into play and the adequacy of that data.

14            But my assumption was that, or my  
15    understanding was that this coworker model was  
16    developed just to alleviate those types of  
17    issues and those types of concerns to begin  
18    with.

19            DR. NETON: I guess I'm still a  
20    little confused -- your concern. Prior to '64  
21    it is our position that we cannot reconstruct  
22    occupational internal dose.

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1                   MR. STIVER:     Right.     But there's  
2     still -- you would still --

3                   DR. NETON:       We're talking now  
4     about the external coworker model here.

5                   MR. STIVER:     Okay.

6                   DR. NETON:       So the external  
7     coworker model.    We would still reconstruct  
8     external dose for non-presumptive cancer prior  
9     to '64 given that we have a valid model.

10                  MR. STIVER:     Right.    And you would  
11     still also --

12                  DR. NETON:     And we would attempt  
13     to reconstruct environmental models.   That's  
14     still undergoing completion.   But if it's in  
15     the past, we can come up with a valid way to  
16     either back-extrapolate later or review  
17     additional information.   And we would assign,  
18     at a minimum, the environmental exposures to  
19     workers.     Even though they may have been  
20     occupationally exposed, we can't reconstruct  
21     that.    But at the minimum exposure they would  
22     receive would be what?   What the environmental

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1 background was at that time.

2 Normally a person when -- like say  
3 after '64 we can reconstruct occupational  
4 internal exposures we do not assign  
5 environmental because that's assumed in that  
6 estimate. So just sort of phased approach. I  
7 mean we would do the best -- we always  
8 maintain that we'll do the best we can given  
9 the data that are left to reconstruct anything  
10 we can during partial dose reconstructions  
11 during the SEC period.

12 MR. STIVER: And certainly that's  
13 the best you can do I mean.

14 DR. NETON: And most often that  
15 almost always includes medical exposure.

16 MR. STIVER: Right. Medical  
17 exposure.

18 DR. NETON: Would include  
19 environmental if we have a valid environmental  
20 model as well as external badge data support  
21 of coworker model in that era.

22 DR. MAURO: Would it be fair, Jim,

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1 to say until the Work Group and, I guess, SC&A  
2 has a chance to look at the internal coworker  
3 model, the environmental extrapolation  
4 approach and, of course, we resolve some of  
5 the issues on external which we'll get to  
6 later, it's really hard for SC&A at this time  
7 to say that "Yes, we think that 1964 is a good  
8 date?"

9 DR. NETON: Well, absolutely,  
10 John. That was what I was going to offer is  
11 that it seems that we have three issues here,  
12 internal/external coworker models and  
13 environmental, all in various states of  
14 review. And until all of those are complete  
15 and you've had a chance to review the final  
16 products, I don't think we can say anything  
17 about the '64 date.

18 DR. MAURO: Jim, thanks. I just  
19 needed to hear that to make sure that everyone  
20 -- that was my understanding also.

21 DR. NETON: Yes.

22 DR. MAURO: And I wanted to make

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1       sure.     These are all important issues, and  
2       they're not just Site Profile issues.     They  
3       are issues that may also have significance  
4       related to, ultimately, a judgment made by the  
5       Work Group and, of course, the Board regarding  
6       1964.

7                     DR. NETON:     And indeed we may feel  
8       we have a valid model after '64 for internal.

9       But past history you know there may be some  
10      issues with the quality of the data and the  
11      quantity of the data and early periods that we  
12      need to discuss.     It's not slam dunk at this  
13      point.     We feel fairly comfortable, but until  
14      we can produce it -- and, as you know, all of  
15      the major radionuclides of exposure, not just  
16      a couple.     That's usually the hard part of  
17      getting down into the lesser, the  
18      radionuclides that have -- or lesser exposure  
19      pathways where the monitoring data may be much  
20      worse.

21                     I wish we were further along with  
22      that.     But the fact is, we're not.     As Lara

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1 indicated earlier on, we put a lot of effort  
2 in getting these SEC petitions out the door  
3 this year, and we decided to put efforts into  
4 moving that forward because we feel it's  
5 important that we get the SEC Classes  
6 established once we identify that they're  
7 there.

8 And now we're in the midst of  
9 tackling the remaining several issues here.  
10 Although I would be very happy to go through  
11 the external comments you have and we can talk  
12 about them.

13 MR. STIVER: Well, we're  
14 definitely ahead of schedule. Would you like  
15 to do that after the break, just go ahead and  
16 go into the external coworker issues that we  
17 have instead of deferring that to the  
18 afternoon?

19 CHAIRMAN GIBSON: We can take an  
20 earlier break and then start the discussion.  
21 But we need to, about eleven o'clock, start  
22 talking about this issue of how to track

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1 workers and stuff since Jeff is going to be on  
2 the phone.

3 MR. STIVER: I think that's really  
4 the remaining outstanding issue, isn't it?  
5 Why don't we just go into that now then?

6 MR. KATZ: Anybody need a break  
7 already?

8 (Chorus of nos.)

9 MEMBER SCHOFIELD: Do you guys  
10 have any time frame when you think this, what  
11 you're doing on this issue will be ready?

12 DR. NETON: It's going to be in a  
13 months time frame, not weeks.

14 MEMBER SCHOFIELD: Okay.

15 DR. NETON: That's the best I can  
16 tell you. I wish I had a better -- we were up  
17 against also this deadline to produce all the  
18 backlog of claimants that we've had. It's  
19 been a priority.

20 (Simultaneous speaking.)

21 COURT REPORTER: One at a time  
22 please.

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1 CHAIRMAN GIBSON: Okay.

2 MR. KATZ: So, Jeff, are you with  
3 us still? Jeff Kotsch?

4 (No response.)

5 He may have dropped off, be  
6 rejoining us at eleven.

7 CHAIRMAN GIBSON: Yes.

8 MR. STIVER: So we just defer that  
9 to eleven then?

10 CHAIRMAN GIBSON: Yes. We told  
11 him we were going to start around eleven.  
12 Shall we take a break then?

13 MR. STIVER: I don't know if  
14 anybody needed a break.

15 CHAIRMAN GIBSON: Well, we've been  
16 going for an hour. We can --

17 MEMBER MUNN: This is Wanda.  
18 Before we go to the break, did the discussion  
19 that just took place incorporate issue number  
20 seven, Neutron Dose Methodology? I didn't  
21 hear -- I wasn't aware of any comment at all  
22 being made about that last --

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1 DR. NETON: I think, Wanda, that  
2 may come up in this external review.

3 MR. STIVER: Yes, we're going to  
4 go through in detail the findings of our  
5 external coworker review and that is one of  
6 the findings. So we wanted to defer that to  
7 Hans's discussion.

8 MEMBER MUNN: All right. So we're  
9 going to do that this afternoon.

10 MR. STIVER: Yes. Or after we  
11 finish with the discussion with Jeff at  
12 eleven.

13 MEMBER MUNN: Right. Thank you.

14 MR. STIVER: Okay.

15 John Mauro, did you have any other  
16 questions or concerns about the status? I  
17 mean I think we're kind of on the same page  
18 here.

19 DR. MAURO: No, that was exactly  
20 what I needed. Thank you very much.

21 MR. STIVER: Okay.

22 So we have some time left. Jim,

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1       could you at least give us the broad brush  
2       stroke view of where you may stand on some of  
3       these environmental issues?

4                   DR.       NETON:               It's       under  
5       development.   I can't give you anything, any  
6       more than that to go on.

7                   MR.   STIVER:     Okay.     Well, I had  
8       one concern related to what Jeff was going to  
9       discuss.   But I guess we can talk about that  
10      as well, and that was the issue of the free  
11      movement in and out of Area IV.

12                               (Simultaneous speaking.)

13                   MR.   KATZ:     I think Jeff needs to  
14      get into that discussion.

15                   MR.   BERONJA:    Want to move to  
16      Hans.

17                   MR.   STIVER:    That's really all I  
18      have on the outstanding issues, I think.   I  
19      guess we can just go right to Hans's  
20      discussion and then come back out when we need  
21      to talk to Jeff and then continue later.

22                   MR.   KATZ:     Yes.     Sure.

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1                   MR. STIVER:   Hans, would you like  
2                   to take over and present your findings of the  
3                   external database review.

4                   DR. BEHLING:   Yes.   Let me just  
5                   make a comment with regard to issue number  
6                   seven that was just brought up by Wanda.  
7                   Issue seven, Neutron Dose Methodology, may --  
8                   it does affect the OTIB-0077 Coworker External  
9                   Dose Model, but it's not strictly confined to  
10                  that either.   So just as a retrospective  
11                  statement here, the issue of the neutron  
12                  dosimetry and the methodology, inclusive of  
13                  the threshold value of 500 KeV and the lack of  
14                  neutron spectra is something that's also in  
15                  addition to affecting the external coworker  
16                  model.   It's also a separate issue that goes  
17                  beyond the coworker model, just a fact-stating  
18                  statement.

19                  Let me also then go ahead and  
20                  start.   But it's not likely we're going to get  
21                  through all of the findings by eleven o'clock.

22                  So I guess any time you feel that we need to

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1 break and give Jeff Kotsch a chance to partake  
2 in the other discussion, give me a heads-up  
3 and then we'll take a suitable amount of time  
4 to take a break from the external coworker  
5 model discussion.

6           The thing that I'm going to be  
7 talking about is going to pretty much track  
8 the draft White Paper that was issued by SC&A  
9 on March 8 this year. And I will probably  
10 make reference to pages and statements in that  
11 paper. So I'm hoping that at least for the  
12 Work Group people and perhaps NIOSH and  
13 others, they will have a copy of that report  
14 so that when I make reference to specific  
15 statements they can actually track it. For  
16 those people who do not have access to this  
17 report, I will try to at least provide some  
18 background information so they'll understand  
19 what the issues are.

20           As has already been stated by John  
21 Stiver, the Boice 2006 database was really the  
22 backbone for this coworker model. And, as

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1 I've stated in my report, I have no problems  
2 in accepting that particular database for the  
3 initial intended purpose. In other words, the  
4 Boice data study was a retrospective cohort  
5 mortality study of the 5,742 radiation workers  
6 who have external radiation exposures. And  
7 just, again, for those people who may not be  
8 familiar with the Boice study, that particular  
9 study really was not confined to Rocketdyne or  
10 Atomic International. But it basically tried  
11 to track their lifetime exposures.

12 Whenever you deal with an  
13 epidemiologic study where you're trying to  
14 establish cause and affect relationship  
15 between radiation exposure and cancer  
16 incidence, you're not really all that  
17 concerned about precisely which year that  
18 exposure occurred. What you're really  
19 interested in establishing for a given worker  
20 is what was his lifetime external/internal  
21 exposure occupationally and then see if  
22 there's any excess cancers that you can

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1 reasonably attribute to that lifetime  
2 exposure.

3 In the case of a coworker model,  
4 we're looking for a much more refined  
5 assessment of data. In other words for a  
6 coworker model, what we're really looking for  
7 is really yearly exposures and yearly  
8 exposures that are defined by external and  
9 internal relationship to the time of the  
10 cancer diagnosis and also trying to really  
11 understand where those exposures occurred.  
12 And important to understand in the Boice  
13 methodology was that they really only required  
14 that a worker be employed at the Santa Susana  
15 facility for at least six months and have some  
16 exposure data during that time interval.

17 And what that really implies is  
18 that for many, many of the workers that are  
19 part of this coworker model, their exposures  
20 occurred at places other than at the Santa  
21 Susana facility. And we don't always know  
22 exactly where these individuals worked and the

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1 conditions in which they work and to what  
2 extent these dosimetry data that have been  
3 collated as part of a lifetime exposure really  
4 qualify, with regard to implementation guides  
5 that basically defines the usability of  
6 surrogate data. And that is one of the major,  
7 major concerns here in this particular  
8 coworker model. And we're going to go into  
9 this as we discuss specific issues.

10 Let me start out by just giving  
11 those people who are not familiar with the  
12 database some statistics. Of the 5,742  
13 Rocketdyne/Atomic International workers,  
14 approximately one-third had exposures at  
15 facilities other than Santa Susana or  
16 Rocketdyne -- we'll use those names  
17 interchangeably -- either before or after  
18 their employment at Santa Susana.

19 And I think one of the things that  
20 I'm going to urge people to do is to really  
21 get an understanding of what the database  
22 really represents. And on page five of my

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1 report in the footnote at the bottom of page  
2 five, you will see the ability to access this  
3 thing on the NIOSH O:drive and I provide the  
4 filing, et cetera. What this database really  
5 represents are individuals, and they have been  
6 redacted so that no person has been identified  
7 by name or Social Security number or anything  
8 else that can be traced to a given individual.

9 But that database represents over  
10 5,800 individuals, and you can identify each  
11 individual by an arbitrarily assigned number.

12 And the database contains three tabs, and the  
13 first tab really provides demographic data.  
14 The data identified the exact years during  
15 which the individual was employed at Santa  
16 Susana. And, of course, in many instances,  
17 those years are very, very limited. As I said  
18 before, the criteria for accepting a worker  
19 was limited to he would only have to work  
20 there for six months. And yet that means he  
21 could have worked for many, many years before  
22 and after, as we will show in my examples

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1 here, at other locations where that  
2 individual's exposure would be collated into  
3 this database.

4 Let me go and identify the very  
5 first issue by paraphrasing -- actually not  
6 paraphrasing, but I will quote part of the  
7 OTIB-0077 statement as it appears. And I'm  
8 taking this quote on page four. And I will  
9 read it for those who don't have access to my  
10 White Paper. It says, "The Santa Susana Field  
11 Laboratory database contains dosimetry data  
12 for penetrating dose which is a combination of  
13 gamma and fast neutron dose." And this is  
14 important. The next statement is important.  
15 "Because it is difficult to separate  
16 statistically significant neutron dose from  
17 the penetrating dose and because the shallow  
18 dose data is not available in the database  
19 described above, the neutron dose component,  
20 which represents less than five percent of the  
21 total data points available, was left embedded  
22 with gamma dose, resulting in penetrating dose

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1 values that are favorable to the claimants."  
2 And that really represents our first issue.

3 The first issue, and I'll skip to  
4 page six of my report. And the first issue I  
5 stated is that NIOSH may have misinterpreted  
6 worker dose that was prepared by Boice, et  
7 al., in their 2006 publication. In essence,  
8 the statement that I just read to you would  
9 imply is that the Santa Susana coworker data  
10 that is represented in tab two of the  
11 database, which I think has a misleading  
12 statement because it refers to total external  
13 dose. It really should have said total  
14 external photon dose.

15 And I think this is possibly  
16 where, or at least I believe, the  
17 misinterpretation on the part of NIOSH may  
18 have come. And I say that the neutron dose  
19 was not in fact embedded in the total external  
20 dose, and I proved that by giving you some  
21 examples. On page six, I provide a table that  
22 shows the number of workers where the total

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1 neutron dose is greater than the total  
2 external dose, which implies that the total  
3 external dose cannot possibly incorporate the  
4 neutron dose or embed the neutron dose along  
5 with the photon dose.

6 In fact, if you look at the  
7 database itself, you will see, as I said,  
8 three tabs. The first tab identifies the  
9 demographic data for each of the 5,800 some  
10 workers.

11 The second tab identifies annual  
12 exposures by year starting in the '40s and all  
13 the way up to 1999. And that, I believe, is  
14 strictly the external deep photon dose.

15 And then in tab three you start  
16 all over again with early years going through  
17 1999, and it provides separate neutron doses.

18 And the two are not collated. In other  
19 words, the neutron dose are very, very  
20 definitely separate entities into that  
21 individual's historical exposures on a yearly  
22 basis.

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1           So, for instance, if you look at  
2           the examples that I provide on page six you  
3           have worker and identify that individual by  
4           worker number 2968 in the year 1956, you can  
5           look at his exposure data and realize that  
6           that person's total external dose was 300  
7           millirem. Yet for that same year his total  
8           neutron dose is 534. So one can easily  
9           conclude that the total external dose does not  
10          incorporate the neutron dose.

11           And I think that's very important  
12          because right now I believe the coworker model  
13          as defined in table two of OTIB-0077 provides  
14          the 50th and the 95th percentiles. And NIOSH  
15          will have, obviously, the chance to respond to  
16          this issue. But it is my interpretation that  
17          dose numbers really reflect only tab two, that  
18          is total external dose, and with the  
19          assumption that the neutron dose is embedded  
20          in that. So that is our first issue is that  
21          NIOSH may have misinterpreted the database as  
22          presented by Boice.

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1                   Let me go to the issue number two.

2                   MR. KATZ:   Hans, before you do, I  
3                   mean do we want to do these issue by issue or  
4                   --

5                   DR.    BEHLING:           It    may    be  
6                   appropriate to do so because it might be  
7                   difficult for everyone to remember what the  
8                   issues were later on.    If NIOSH chooses to  
9                   respond to each issue as we go through it,  
10                  that's great.

11                  MR. KATZ:   Thanks, Hans.

12                  DR.    NETON:    We're responding to  
13                  the neutron control?

14                  MR. KATZ:   If you want.

15                  DR.    NETON:    We agree, I think.    I  
16                  looked at the data set just yesterday, and it  
17                  appears that you're correct, Hans, that the  
18                  neutron dose is not included in the total dose  
19                  column.    So it's just a matter of correcting  
20                  that representation.

21                  DR.    BEHLING:    Yes, and, Jim, this  
22                  also then sets a stage for the issue that I

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1 identified as issue five. Now that we realize  
2 we do have a segregation of external photon  
3 and external neutron dose, you can in fact now  
4 adjust those neutron doses based on quality  
5 factors and other issues that is really part  
6 of issue five.

7 DR. NETON: Absolutely. Yes.

8 DR. BEHLING: Okay. So issue two,  
9 the misuse of termination dosimetry data, one  
10 of the problems that I think we faced here is  
11 obviously an issue again that defines the  
12 Boice database. Boice did not try to --  
13 again, as I mentioned before, in a  
14 retrospective mortality epidemiologic study,  
15 you're not really all that concerned whether,  
16 let's say, a cumulative dose over five years  
17 that it may involve, let's say, 50 rem, ten  
18 rem each year, is integrated into a single  
19 dose for a given year or in the case of our  
20 coworker model that, however, becomes a major  
21 problem because we don't want to necessarily  
22 lump a huge dose that represents a termination

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1 report dose into a given year.

2           And I think for those people who  
3 may not be familiar with it, the termination  
4 dose is frequently obtained by a report that  
5 gets sent to the NRC or some other agency that  
6 says, "This individual has had a cumulative  
7 exposure up to some moment in time that  
8 represents a value." And it's important to  
9 note that number because in those days the  
10 5(N-18) criteria was very much involved. And  
11 in order to be sure that person didn't exceed  
12 the 5(N-18) you have to have known what his  
13 cumulative lifetime exposure was.

14           So when Boice attempted to  
15 assemble a lifetime exposure record for each  
16 of the 5,800 workers, all he really was  
17 interested in in many cases was what was his  
18 total exposure? And it didn't matter whether  
19 or not those doses were lumped into a single  
20 year, as opposed to segregating it by years of  
21 prior exposure at the facilities other than  
22 Santa Susana.

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1           So the termination report, while  
2           it would serve the purpose of the Boice study,  
3           it is inappropriate to use termination data.  
4           And I provide some very high dose values in my  
5           investigation of the Boice database. For  
6           instance, on page seven now, we have a sample  
7           of annual doses that are likely cumulative  
8           with termination doses. And I provide an  
9           assessment of the ones that I have found to be  
10          extremely high.

11           In the case of, for instance,  
12          worker number 2704 who was employed -- and  
13          this is important -- he was employed at Santa  
14          Susana Field Laboratory between 1959, and  
15          that's important to write down, 1959 to 1968.

16          And yet in 1957 two years before he was  
17          employed at Santa Susana, we have what is  
18          obviously a termination report that says he  
19          was exposed in 1957 to 67,205 millirem or 67.2  
20          rem. That's a huge, huge dose that you would  
21          assign, or Boice assigned, to this individual  
22          for a year that predates his employment by two

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1 years at Santa Susana.

2 And you'll see other ones down the  
3 line. This was the one that I found the  
4 highest. But there are others of 63 rem, 44  
5 rem, et cetera, and in all instances, they  
6 precede the employment at Santa Susana.

7 Now, one could argue the point  
8 here that these values will certainly drive  
9 up, especially in the early years of the  
10 database, the 95th percentile value because  
11 these guys would obviously contribute to the  
12 highest dose for any given year. But it  
13 doesn't really significantly affect the 50th  
14 percentile value because that's the value that  
15 most likely will be used to actually identify  
16 a surrogate dose assignment for people were  
17 possibly not monitored.

18 So the value of including these,  
19 NIOSH may argue that these would only raise  
20 the bar to some extent, in the coworker model  
21 would in all likelihood really not do a whole  
22 lot because very few people would really

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1 benefit or be assigned the 95th percentile  
2 value as defined in table two of OTIB-0077.

3           Again, the use of termination data  
4 without breaking it apart has a way of skewing  
5 the high doses for any given year, and they  
6 are most prevalent in the database for the  
7 early years, when people came into or became  
8 employees at Santa Susana with a fairly  
9 substantial lifetime exposure dose that they  
10 received prior to coming to Santa Susana at  
11 other facilities where, again, we don't really  
12 know where these people came from and whether  
13 or not their data really qualifies as  
14 surrogate data regardless of the termination  
15 issue that I just mentioned.

16           So I think having said that, I  
17 will ask Lara or Jim to comment on that issue.

18           DR. NETON: This is Jim. Again,  
19 shocking, but we're in total agreement with  
20 you again on this issue. I think it was just  
21 an inappropriate use of the database itself  
22 without cleaning it as such. I think it would

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1       tend to skew the results high, and I do agree  
2       with you that you would be unlikely to affect  
3       the 95th percentile values. But it certainly  
4       shouldn't be in there.

5                   One thing I would like to just  
6       comment on is, I think in the report, and you  
7       mentioned it a little earlier, that it's sort  
8       of an inappropriate use of surrogate data. In  
9       this particular case, I wouldn't really call  
10      that surrogate data. We weren't really using  
11      it as a surrogate.

12                   It was just, I think,  
13      inappropriately left in the database. It  
14      wasn't our intent, at least my intent, that  
15      those data be used to reconstruct external  
16      exposures for workers at Santa Susana. It  
17      should have been stripped out of the database.

18                   DR. BEHLING: Yes, and as I said,  
19      the -- and we'll get into in the next couple  
20      issues that the inclusion of pre-Santa Susana  
21      employment data is most pronounced in the  
22      early years, mainly obviously starting in

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1 1948, in those early years where, as I will  
2 talk in a few minutes here, where essentially  
3 all of the data that we have available as part  
4 of the coworker came from facilities that we  
5 don't really have any knowledge about.

6 DR. NETON: Right. And the only  
7 other thing I might offer or add here is I  
8 think John might have mentioned this earlier  
9 in the meeting that it seemed to me based on  
10 my look through the database that there's  
11 sufficient information in the demographic  
12 columns to be able to strip out those  
13 inappropriate exposures. Because we have a  
14 database that indicates these employment years  
15 for each person, and it would be a fairly  
16 simple matter just to discount the records  
17 that are there for years when they weren't  
18 working at the facility.

19 DR. BEHLING: Yes, and, as I said,  
20 I think John Stiver had already mentioned that  
21 a substantial amount of data stripping may  
22 make the coworker model palatable. Although

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1 you're going to realize you're going to be  
2 dealing with a lot fewer data points.

3 DR. NETON: Right.

4 DR. BEHLING: But it may still be  
5 sufficient to come up with some estimate of  
6 coworker data by year.

7 DR. NETON: Right.

8 DR. BEHLING: Issue number three  
9 and I'm on --

10 MR. KATZ: Before we go -- this is  
11 Ted Katz -- so is that an action item in  
12 effect, is DCAS going to --

13 DR. NETON: We're going to revise  
14 --

15 MR. KATZ: -- revise --

16 DR. NETON: -- 77 to --

17 MR. STIVER: Okay. I think that  
18 will involve several of the other issues Hans  
19 is going to describe, too.

20 DR. HUGHES: Yes, they would all  
21 be addressed.

22 MR. STIVER: Yes, they will all be

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1 addressed. We went over all action items.

2 MR. BERONJA: Okay. I know it's  
3 about five minutes till eleven. I don't know.

4 Is this a big issue this next one, Hans?

5 DR. BEHLING: Well, I think it  
6 might be a good time to take a quick comfort  
7 break here and then come back in time for Jeff  
8 Kotsch to be on with the issue that we need to  
9 address at eleven o'clock.

10 MR. KATZ: Okay. Why don't we do  
11 that? Thanks, Hans. And we'll take a brief  
12 break and then at eleven we'll start up again  
13 and hopefully have Jeff on the phone.

14 (Whereupon, the above-entitled  
15 matter went off the record at 10:54 a.m. and  
16 resumed at a 11:03 a.m.)

17 MR. KATZ: Okay. We're back  
18 together. Let me check first and see that we  
19 have Jeff Kotsch on the line.

20 MR. KOTSCH: I'm here, Ted.

21 MR. KATZ: Great. And, Wanda, are  
22 you still with us?

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1                   MEMBER MUNN: Yes, I am.

2                   MR. KATZ: Great. So, Jeff, we're  
3 going to begin discussing matters relevant to  
4 you. I think John Stiver has some sort of  
5 preliminary discussion.

6                   MR. STIVER: Yes, I think it may  
7 echo what Jeff is going to say. But in  
8 reading the Board meeting from February, this  
9 was a very hot topic of discussion and I guess  
10 what you have is a situation that's kind of  
11 similar to Canoga and representative microcosm  
12 where you have poorly defined boundaries for  
13 Area IV. In combination with that, the  
14 boundaries are changing over time and  
15 expanding. And yet there's very poor access  
16 control into areas. So you have essentially  
17 free movement in and out of Area IV by non-  
18 Area IV workers, the Rocketdyne workers.

19                   And so while they're there,  
20 there's a potential to be contaminated to  
21 radionuclides which originate in Area IV. I  
22 guess there's kind of a fairness issue here.

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1 Now I realize that the SEC petition was  
2 designated for Area IV personnel. But it  
3 seems like there's a large group out there who  
4 may be there for a 250 day period and may not.

5 At this point, we don't know who may have  
6 been exposed.

7 And, of course, that's really my  
8 concern about that. And at the meeting, it  
9 was extensively discussed, but there was never  
10 any resolution or nothing ever came out of  
11 this in the new guide and I was left hanging.

12 Jeff, I guess I'll let you take  
13 over here and give us your perspective.

14 MR. KOTSCH: At DOL, we're just  
15 trying to verify employment for the DOE area  
16 that's actually within -- it's actually for  
17 Area IV. And we can't -- as far as people  
18 moving between the different areas out there,  
19 you know, the test stand and I think that's  
20 Area 2 and you know the NASA test stand and  
21 stuff like that, we don't get into that per se  
22 because we're just interested in placing

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1 people into Area IV, you know, basically the  
2 DOE facility there.

3 MR. STIVER: Okay. So your area  
4 of interest was within Area IV how to define  
5 who was in the DOE portion of that area.  
6 Okay. I understand.

7 MR. KATZ: So, maybe you can  
8 explain for John just to be explicit about it.

9 What does DOL do about employees who are not  
10 formally employees of the Area IV that's  
11 covered but that are coming in and out of the  
12 area and were perhaps accumulating exposures  
13 associated with those visits.

14 CHAIRMAN GIBSON: Excuse me.  
15 There's also one other issue tied into that  
16 and that's that there were company employees  
17 who may at times have been assigned to Area 1,  
18 2 or 3, but then a workload picked up. They  
19 were assigned, not just moved in and out.  
20 They could have been there for extended  
21 periods of time. You know there seems to be a  
22 lack of records to demonstrate that.

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1                   MR. STIVER:    So is your statement  
2                   based on record input then or recollections?  
3                   There are really no employment records or  
4                   demographic aid that would demonstrate that.

5                   CHAIRMAN GIBSON:    There's still  
6                   the fact of a lot of overtime, six day work  
7                   weeks.  And there's -- when we toured the site  
8                   out there, even the DOE and the company  
9                   couldn't tell us how they tracked workers or  
10                  once you get past the guard at the entrance of  
11                  the plant, there you go.

12                  MR. KATZ:    Right.  So just to be  
13                  clear you're talking about employees who are  
14                  formally assigned to that area or not and then  
15                  are coming into the area.  Which are you  
16                  speaking of?

17                  CHAIRMAN GIBSON:  It can work both  
18                  ways.  If they're formally assigned to the  
19                  area, Jeff, can you address that?  I mean, if  
20                  they're formally assigned, then we do their  
21                  dose reconstruction.  They're covered  
22                  employees, right?

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1           MR. KOTSCH:    If they're assigned  
2           to that area, yes.  I mean again everything is  
3           done on a case-by-case basis based on records,  
4           you know,    employment records,    security  
5           records, affidavits if they're presented and  
6           things like that.  But certainly if they're in  
7           Area IV or if they appear to be employed at  
8           Area IV and we can verify that employment  
9           area, then they would be covered.

10           MR. STIVER:  I guess the dose time  
11           impact is 250 days, doesn't it?  I mean if you  
12           have a person who's assigned to Area IV and it  
13           appears on paper that they were there 250  
14           days, but maybe they weren't.  Maybe they  
15           left.  So that might have implications for  
16           working the other way of folks who were  
17           assigned in 1, 2, or 3 and then came in for an  
18           extended period who are not get consideration  
19           in the SEC.

20                        Now Ted brought up a point.  Would  
21           dose reconstructions be performed for  
22           claimants from those other three areas?  I

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1 mean they clearly wouldn't fit the definition  
2 of the SEC. But that would not be --

3 DR. NETON: We would only  
4 reconstruct doses that are sent to us from the  
5 Department of Labor.

6 MR. STIVER: And those would be  
7 for Area IV and they wouldn't be.

8 DR. NETON: From what you're  
9 saying, the person would have to demonstrate  
10 some employment in Area IV.

11 MR. STIVER: A period of --

12 DR. NETON: Without that and  
13 demonstrating that I don't think they would be  
14 accepted in the claim which is different from  
15 the other sites. If you look at -- you know  
16 we had Canoga where you had the Vanowen  
17 building. The whole site was covered even  
18 though for all practical intents and purposes  
19 the Vanowen building is the only building with  
20 DOE activity or ADC activities took place. I  
21 think that's sort of the distinction that's  
22 been made here. Why is Area IV different than

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1 that?

2 MEMBER BEACH: What would you  
3 consider an acceptable demonstration of work  
4 in that area?

5 DR. NETON: That would totally be  
6 up to Department of Labor.

7 MR. KATZ: That's a question for  
8 Jeff Kotsch.

9 MEMBER BEACH: That is?

10 MR. KATZ: Yes.

11 MEMBER BEACH: Jeff, did you hear  
12 that question?

13 MR. KOTSCH: I'm sorry. Could you  
14 just repeat that?

15 MEMBER BEACH: Well, I was just  
16 wondering what would be considered an  
17 acceptable demonstration of working in Area  
18 IV. If you weren't assigned to that area and  
19 yet you worked in that area how would you  
20 prove that you were actually in that area?

21 MR. KOTSCH: Again, on a case-by-  
22 case basis, it's confirmation from DOE or I

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1 guess it would be Boeing. There might be  
2 security records. There might be affidavits  
3 presented. Personnel records. I mean there's  
4 a host of things that are used by the claims  
5 examiners when they attempt to determine  
6 whether the person was employed, you know, I  
7 mean worked in Area IV basically or for there  
8 because that was the area that was under the  
9 DOE contract at Atomics International.

10 MS. KLEA: This is Bonnie. I'd  
11 like to add something. We had a lot of the  
12 support services that were out of Area IV, but  
13 they were in Area IV all the time for the  
14 maintenance and for the -- they used the -- A  
15 lot of people used the x-ray lab.  
16 Nondestructive testing came in and out. Used  
17 their x-ray lab buildings.

18 And don't forget the fire  
19 department. They served all the areas. They  
20 were the first on the site for uranium fires.

21 And a lot of the records only show a shack  
22 where they were working which was where they

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1 clocked in. Very difficult to know exactly  
2 which building they were in. Are you there?

3 MR. KATZ: Yes. Thank you,  
4 Bonnie. So it sounds like in some of the  
5 situations where they don't have records I  
6 think Jeff was saying that's where they rely  
7 on affidavits, other forms of confirmation  
8 that the person was employed.

9 MS. KLEA: Well, it's difficult to  
10 get an affidavit because most of the people  
11 are dead. I mean this is 50 years ago.

12 MR. KATZ: Right. Well, I'm sure  
13 there are limitations to what DOL can do to  
14 confirm coverage.

15 MS. KLEA: Right.

16 MR. KATZ: But that's a process  
17 that goes on then at DOL before NIOSH ever  
18 sees the claim. It doesn't come to NIOSH  
19 unless DOL can confirm that the person was  
20 working within the covered facility.

21 MS. KLEA: Right. Well, almost  
22 every worker, it's like an unanimous opinion

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1 that it was not controlled. They were in and  
2 out, clocking in at Canoga, then going up and  
3 doing electrician -- you know, electricians  
4 would go up and work or the x-ray laboratory  
5 would be used and they went in and out without  
6 even thinking of any areas. Most of the  
7 workers didn't know there was such a thing as  
8 areas up there.

9 MR. KATZ: Yes, and that certainly  
10 sounds like a challenge for DOL in some of  
11 these cases.

12 MS. KLEA: Exactly.

13 MR. KATZ: I recognize that.

14 MR. STIVER: This is John Stiver.  
15 It seems that there's kind of a parallel  
16 here. It's almost like a precedent that's  
17 getting set with the Canoga facility by  
18 expansion. But yet from Labor's standpoint, I  
19 can see how they can say that in that  
20 situation we really can't identify a person  
21 for the full period with any -- whereas we can  
22 with Area IV.

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1 I guess, Jeff, what is the -- say,  
2 you have a site that's defined for a certain  
3 area for a certain category of workers and  
4 evidence is presented that may not be  
5 adequate. There may be other workers that  
6 indeed could have received doses in that area.  
7 What's the Labor process for going through  
8 and potentially redefining any area based on  
9 new information?

10 Jeff, are you still with us?

11 MR. KOTSCH: Yes. We would need -  
12 - we would have to submit evidence of  
13 operations if you're talking periods outside  
14 of our facilities outside of what's already  
15 defined, proprietary interests and --

16 MR. STIVER: What types of  
17 information would be considered adequate for  
18 considering an expansion of an area  
19 definition?

20 MR. KOTSCH: Well, like I said,  
21 evidence of contracts with DOE or AEC,  
22 proprietary information if that were

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1 available, information on operations.

2 PARTICIPANT: This is --

3 MR. KOTSCH: Hang on a second.

4 MS. ENDERS: This is Caroline  
5 Enders. I'm here with Jeff Kotsch, too. One  
6 of the things we're running up against here is  
7 the scope of the DOE facility and, with regard  
8 to Santa Susana, Area IV has been defined as  
9 the DOE facility. And so to change definition  
10 -- to expand what constitutes a DOE facility,  
11 one needs to meet the definition of a DOE  
12 facility that's specified in the law.

13 And you know here -- and that  
14 would be you've got to have operations  
15 conducted on behalf of DOE facilities on  
16 behalf of DOE. And then DOE either has to own  
17 premises of the building or there has to be a  
18 management in operating, a management in  
19 integration, construction services or  
20 remediation type of contract in place for that  
21 location.

22 So that is what defines the scope

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1 of the facilities. It's really different that  
2 that, but it's related to employment.

3 MR. STIVER: Okay. I guess the  
4 other facet to that is that once that facility  
5 is defined then workers would be subject to  
6 that definition would then have to provide  
7 some kind of concrete proof that they were  
8 indeed there for any specified period of time.

9 And that's what we have here. We just don't  
10 have proof. We have recollections, but we  
11 don't have any documented demographic data  
12 that would indicate that.

13 MR. KOTSCH: That's correct.

14 MR. STIVER: So we're kind of  
15 hammering on the stand still at this point.

16 Anybody else have comments they'd  
17 like to provide regarding this issue?

18 MS. KLEA: Well, I'd like to say  
19 one more thing that it's very difficult to  
20 find the proof. I have several workers who  
21 work at the Van Nuys facility and in the '50s  
22 the fuel rods were taken from the SRE for

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1 reprocessing at the Van Nuys facility. I have  
2 reports done by the reporter writers. I have  
3 eyewitness testimony. Yet no contracts were  
4 found with the DOE on using that facility.

5           So these workers were given credit  
6 for being at the De Soto facility when they  
7 actually weren't. There is very little  
8 evidence of a clear definition of the DOE  
9 buildings and the DOE boundaries and it's  
10 consistently changed as I showed you at the  
11 meeting in Manhattan Beach. I showed you the  
12 boundaries in '56 compared to the boundaries  
13 today and we don't know when exactly that  
14 evolved. So very unclear as to a true  
15 definition of the scope of this facility.

16           MR. STIVER: And I think the  
17 changing boundary issue is really more related  
18 to who might have been there without having  
19 awareness of it or who could have potentially  
20 been exposed.

21           But I think having that kind of  
22 come into this midgame I guess I'm really not

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1 100 percent sure what type of due diligence  
2 has been done or whether there's additional  
3 work that could be done to try to identify  
4 records for these personnel that might Mike  
5 Gibson and Bonnie have talked about. I mean  
6 there may be records out there that just  
7 haven't been identified that could then be  
8 used to used to possibly do dose  
9 reconstructions for these persons.

10 MS. KLEA: Very little records.

11 MR. STIVER: But do we know for a  
12 fact that there aren't any records that might  
13 exist?

14 MS. KLEA: Well, we've done  
15 research especially at the Van Nuys facility.

16 I've presented reports and I've presented  
17 claims on workers who were there and a map  
18 which showed all the DOE facilities in this  
19 area. Showed the Van Nuys facility. Yet no  
20 records have been found showing a contract  
21 with DOE.

22 So whether it was a subcontract

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1 out of Atomics International De Soto facility  
2 to use those buildings I don't know how the  
3 system works. But we're certainly lacking on  
4 information, lacking on areas where we can  
5 place the workers because there were only two  
6 places to clock in for 400 buildings.

7 And I have two dozen claims at  
8 least here for the families which showed lack  
9 of anything for the time periods. No  
10 buildings were listed. Just blank spaces. So  
11 this is one of the really difficult issues.  
12 How can you do dose reconstruction for people  
13 when you don't know where they were?

14 MR. STIVER: I guess I'm looking  
15 at this as to whether the Board would consider  
16 it worthwhile to conduct further research.

17 MR. KATZ: That's already  
18 essentially been done. I mean NIOSH reported  
19 just in this meeting that they've looked  
20 through their records and don't have more to  
21 substantiate expanding at least from the  
22 records that NIOSH has come across. I mean it

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1 really is a DOL issue, not a Board issue to do  
2 research on the boundary definitions for the  
3 operation or to have other means by which to  
4 place people as covered employees.

5 MR. BERONJA: I guess there's the  
6 two options then. They can either go on by a  
7 case-to-case basis and gather whatever they  
8 can gather or change the definition of what's  
9 included in Area IV, right?

10 MR. STIVER: Right.

11 MR. BERONJA: So I guess, is Labor  
12 comfortable in going ahead with the case-by-  
13 case or if they say it's not possible in many  
14 cases and then we may need to have some other  
15 consideration just like Canoga. Isn't that  
16 true?

17 DR. NETON: Well, Canoga, the  
18 facility was already broad based. It was the  
19 entire Canoga site.

20 MR. BERONJA: That's what I mean.  
21 Do we have to go to the whole site for Area  
22 IV?

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1                   MR. KATZ: I think what DOL has  
2                   said but, Jeff, you can amend that -- I mean  
3                   what DOL has said in this meeting is that  
4                   their documentation doesn't provide them a  
5                   basis to expand the boundaries beyond Area IV.  
6                   We don't have a cover facility basis for  
7                   other areas even though employees may have  
8                   come into the area for -- I mean that's one of  
9                   the different questions.

10                  MR. STIVER: Right. You couldn't  
11                  define a DOE facility.

12                  MR. KATZ: They're not working for  
13                  the covered facility when they're at their  
14                  normal place of work. Only when they come  
15                  into the boundaries and the whole issue is  
16                  just then affirmatively showing that they did  
17                  come into that area and work for the covered  
18                  facility in which case again affidavits where  
19                  you don't have documentation. If you don't  
20                  have survivors or what have you to even be  
21                  able to produce affidavits I think I don't  
22                  know what DOL does in that circumstance.

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1           Jeff, is there more you want to  
2 elaborate from my attempt there?

3           MR. KOTSCH: No. But again, all  
4 of Area IV is covered right now. That's  
5 what's considered the building.

6           MR. BERONJA: So there has been no  
7 other precedent within the NIOSH program or  
8 something like this where there's other  
9 outlying facilities outside of DOE defined  
10 facility where there was movement of people  
11 back and forth where the area was --

12           DR. NETON: No, we've had some  
13 situations where additional facilities have  
14 been added to an existing facility. For  
15 example, I think of Chapman Valve and the -- I  
16 forget the name of that offsite. But there  
17 was another building where it was actually  
18 determined to have possibly moved some  
19 material. So that was annexed onto the  
20 Chapman Valve.

21           MR. BERONJA: But that was more  
22 operation based than employee based.

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1 DR. NETON: Yes.

2 MR. BERONJA: It hasn't been done  
3 for an employee.

4 DR. NETON: It's always been  
5 operation.

6 MR. STIVER: The issue we have  
7 here is an inability to the process to add  
8 class of employees without facility definition  
9 without providing some sort of documented  
10 proof that they were indeed there for a period  
11 of time.

12 MR. KATZ: So I imagine this  
13 occurs at other -- Jeff, you could correct me,  
14 but I imagine this same situation occurs at  
15 other facilities where you have employees who  
16 come into the site but are not covered  
17 employees. They can't demonstrate that.  
18 They're probably at various other facilities  
19 where this occurs to some extent.

20 MR. KOTSCH: Yes, that's true,  
21 Ted. And then you also have the people that  
22 come on the sites that aren't actually

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1 employees.

2 MR. KATZ: Right.

3 DR. NETON: Your contractors.

4 MR. KOTSCH: Your vendors, guys  
5 delivering mail or some machine or whatever.

6 MR. STIVER: But again you don't  
7 have a demonstration that they were there.

8 CHAIRMAN GIBSON: So, Jeff, this  
9 is Mike. Does your current definition of Area  
10 IV does it include Building 9 and Building  
11 373?

12 MR. KOTSCH: Mike, I'd have to  
13 check. I mean if it's in Area IV it would  
14 cover it. I don't know that there's any  
15 restriction by building. It's just the  
16 boundary basically.

17 CHAIRMAN GIBSON: The boundary  
18 you're currently using, I just want to know if  
19 Building 9 and Building 373 is included inside  
20 that boundary or in other areas of Santa  
21 Susana.

22 MR. KOTSCH: Yes. I'd have to get

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1 back to you, Mike, because I don't have that  
2 right in front of me. What buildings again?  
3 Nine and?

4 CHAIRMAN GIBSON: Three seventy-  
5 three and also the old conservative yard.

6 MS. KLEA: Lara mentioned, Lara  
7 Hughes mentioned, that it was in Area IV. But  
8 this letter I have in DOE in 1996 says it was  
9 outside of DOE areas.

10 DR. HUGHES: Yes, it says outside  
11 the DOE portion of Area IV. I'm not sure what  
12 map DOE uses, but the one NIOSH uses for the  
13 TBDs does include these three facilities in  
14 Area IV and they're covered in our Site  
15 Profile. So I can't speak to DOL.

16 MR. KOTSCH: This is Jeff Kotsch.  
17 If NIOSH is including it, we included it,  
18 too.

19 MS. KLEA: Okay. So that means  
20 that any worker at these areas would be under  
21 the SEC?

22 DR. HUGHES: Yes.

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1 MR. KOTSCH: Right.

2 MR. KATZ: Yes, unless they don't  
3 have a covered cancer or their required days  
4 in which case they would get a partial dose  
5 reconstruction.

6 MR. KOTSCH: Again this is Jeff.  
7 I think we consider in Area IV. If they're in  
8 Area IV, then that applies.

9 MS. KLEA: Well, the problem is  
10 they didn't use the building numbers for  
11 locations. They used a code and there is no  
12 key to that code. So we don't know which  
13 buildings anyone worked at.

14 MR. KOTSCH: Again, I'd have to --  
15 I'm not quite sure how that's handled other  
16 than on a case-by-case basis they'd attempt to  
17 place the people within Area IV if they could  
18 based on whatever evidence that they have.

19 MS. KLEA: Well, this is really  
20 one of the big issues because the surviving  
21 families have no idea where members worked.  
22 They have no idea really what they did. So

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1 this is a difficult situation.

2 MR. KATZ: Jeff, is this something  
3 that DOL might research, this code that they  
4 have against whatever records DOL has from the  
5 facility to be able to crack the code so to  
6 speak?

7 MR. KOTSCH: I think -- I mean  
8 certainly we could look at it, but I think you  
9 need to have that submitted as a formal  
10 request to here at headquarters so that we  
11 could review it.

12 MS. KLEA: I have some reference  
13 for that. It's very much spelled out in the  
14 UCLA report and I have the page numbers. And  
15 I was told by Laurie Breyer you do have that -  
16 - You have that as a reference. It's already  
17 in the Department.

18 MR. KATZ: Well, Bonnie, that  
19 sounds like something worth pursuing with DOL  
20 formally.

21 MS. KLEA: How am I going to do  
22 that? I can tell you right now the UCLA

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1 report published in 1997, page 11, details the  
2 problems with the areas. They used a two-  
3 digit code for some of the years. And for  
4 some of the years they used a three-digit  
5 code. They had two places to clock in for  
6 the 400 different buildings and Boeing has no  
7 key to the codes.

8 MR. KOTSCH: This is Jeff Kotsch.  
9 My recommendation, Bonnie, is that you just  
10 submit a brief letter describing whatever  
11 information you want us to look at and send it  
12 here to Rachel Leiton.

13 MS. KLEA: Okay.

14 MR. KOTSCH: I think that's the  
15 best way to approach that.

16 MS. KLEA: Okay. But you already  
17 have the information. Can't you just go ahead  
18 and do it?

19 MR. KOTSCH: I personally don't  
20 know. I mean I don't have that information.  
21 I could check around and see. But these are  
22 usually better handled by formal requests so

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1 that they get responded to and that you get  
2 some decision.

3 MS. KLEA: Okay. So just tell her  
4 what's the UCLA report and ask her for a  
5 response.

6 MR. KOTSCH: Yes, I mean site.  
7 Ask the question that you're trying to link  
8 the codes to whatever you can reference that  
9 report I guess.

10 MS. KLEA: Okay. All right.  
11 Because they're not linked to any -- The codes  
12 are not linked to anything. They're not  
13 linked to a building. They're not linked to  
14 an area.

15 MR. KATZ: So, Bonnie, in your  
16 letter I would encourage DOL to have  
17 discussions with Boeing and try to pursue that  
18 further. I mean it may be that Boeing doesn't  
19 have the answer at its disposal. But more  
20 digging at Boeing might produce an answer to  
21 this problem. So it might take a little work  
22 on the part of Boeing.

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1                   And you know they don't get paid  
2                   for doing this stuff.    So in some cases I  
3                   think we've had the experience where the  
4                   employers at these who don't have any current  
5                   contract and so on, they may not go to the  
6                   full length of effort that you might want them  
7                   to without more encouragement and they could  
8                   get that encouragement from DOL perhaps.  You  
9                   should pursue that and lay that out in your  
10                  letter to DOL.

11                  MS. KLEA:    Okay.    So a hard copy  
12                  send it by snail mail or should I do an email?

13                  MR. KOTSCH:   Bonnie, this is Jeff  
14                  Kotsch.  I think a letter is more appropriate.

15                  MS. KLEA:    Okay.  I'll do that.

16                  MR. KOTSCH:   I appreciate it.

17                  CHAIRMAN GIBSON:   So it continues.

18                  Did Hans have more?

19                  MR. STIVER:    Yes.    Hans has more  
20                  show.

21                  Hans, are you with us still?

22                  DR. BEHLING:   Yes, I'm still here.

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1                   MR. KATZ:     So we probably could  
2     just pick right up with -- I think we're on  
3     issue three.

4                   DR. BEHLING:   Issue number three,  
5     yes.    And for those who have the report I  
6     would ask you to turn to section 4.3 on page  
7     eight and issue three is really an overview of  
8     how the database consists of information that  
9     goes beyond the Santa Susana Field Laboratory  
10    exposures.   And I have multiple examples on  
11    that.

12                   In the first set of examples, I  
13    have identified worker number 3,344 and worker  
14    number 5,668 as examples.   And their annual  
15    exposures are defined in table three that is  
16    on page nine of my report.   If you look at,  
17    for instances, worker number 3,344, he was  
18    employed at Santa Susana for only five years  
19    between 1958 and '62.   And the other worker  
20    5668 he was employed only at Santa Susana for  
21    three years, namely 1960 and '62.

22                   And if you look at the table, for

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1 instance, the first worker 3344, his first  
2 exposure was identified in 1948. And of  
3 course that exposure is 6,186 millirems and of  
4 course that's in all likelihood was the  
5 determination for it. Then he worked for ten  
6 years -- No, he worked for five years or so.  
7 No, it's even more than that. If you look at  
8 the data, I don't have the count. But he  
9 worked obviously for a total of 33 years of  
10 which only five years were spent at Santa  
11 Susana. And in the five years that you're  
12 looking at -- I'm referring to table three  
13 now.

14 If you're looking at the dates  
15 here, he worked at Santa Susana for '58 to '62  
16 and yet there's only two doses assigned for  
17 those five years. And yet the bulk of his  
18 exposure comes from facilities that are  
19 unspecified including that very large initial  
20 dose in 1948 of 6,186 millirem.

21 For the second worker 5668, again  
22 we start out with obviously what would be a

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1 determination dose of 11,711 millirems. And  
2 then, of course, he worked at all these other  
3 facilities and we don't know which ones. But  
4 they are unspecified. And there are some very  
5 hefty doses there. Obviously, when you look  
6 at 1958 and 1959, he had doses of 5.6 rem and  
7 8.7 rem. And these are all exposures that he  
8 received some place other than Santa Susana.  
9 On the other hand, he did receive some  
10 substantial doses at Santa Susana for the  
11 three years that he worked there from '60 to  
12 '62.

13 But what it really points out to  
14 is that for many of these workers and these  
15 are probably extreme cases we have an awful  
16 lot of annual doses that were received at  
17 facilities that remain unspecified. And at  
18 least for these two people and there are  
19 plenty of others their exposures, their  
20 lifetime exposures, were relatively minor  
21 exposures received at Santa Susana as exposure  
22 received at facilities elsewhere.

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1                   MR. BERONJA:   Hans, this is Greg.  
2           Just for clarification, when you say Santa  
3   Susana are you talking about all four sites or  
4   is Boice talking about all four sites as far  
5   as just Santa Susana or Area IV?

6                   DR. BEHLING:   Well, I think again  
7   I'm not so sure because in tab one of the  
8   spreadsheets it only identifies the years of  
9   employment    at   Rocketdyne    and   Atomic  
10   International.   And I'm not sure whether that  
11   includes Area IV or is more restrictive.   I  
12   really don't know.

13                  MR. BERONJA:   Okay.

14                  DR. BEHLING:   But I listed it  
15   here.   So you can just look at table three on  
16   page nine and identify those years where I  
17   have Santa Susana Field Laboratory in the  
18   columns that says, "Okay, this is exposure  
19   that perhaps may be the only exposure that we  
20   should have in this coworker database as  
21   opposed to all the other exposures that these  
22   individuals received at facilities other than

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1 Santa Susana and may not qualify for inclusion  
2 in the coworker database."

3 Any extreme example when we talk  
4 about perhaps the use of inappropriate data  
5 from other facilities is really defined for  
6 instance for the very first year. If you look  
7 at table two of TIB 77 for 1948, that table in  
8 TIB 77 identifies 46 individuals as  
9 contributing to a dose that is defined at the  
10 50th percentile to 95th percentile.

11 And if you look at that database  
12 for 1948 and that's defined in table 4 on page  
13 11 of my report, you will realize that not a  
14 single worker for the first year for which  
15 this database is intended to be used, 1948,  
16 not a single worker of the 46 individuals who  
17 contributed to that estimated dose at the  
18 50th/95th percentile was actually employed at  
19 Santa Susana. And I think that is really  
20 something that is a hallmark of perhaps the  
21 data that is currently used in the coworker  
22 model. It is perhaps not appropriate. And

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1 the extreme case here is the very first year  
2 in 1948 where all 46 individuals that  
3 represent the 50th and 95th percentiles dose  
4 values were individuals who worked at  
5 facilities that had nothing to do with Santa  
6 Susana.

7 I went the next step and I said,  
8 "Okay. Let me go and look at another data  
9 point and that is for the year 1950." And for  
10 the year 1950 based on table two of TIB 77,  
11 the number of data points they identified here  
12 was 118. And I again looked at that  
13 particular dataset and said, "Okay. Let me go  
14 look at all 118 individuals that represent  
15 that year's 50th and 95th percentiles dose  
16 value and determine whether or not they were  
17 actually working there at Santa Susana and  
18 received that dose there or someplace else."

19 And it turns out that 59 exactly  
20 half of 118 individuals had exposures at Santa  
21 Susana and 59 or the other 50 percent of the  
22 individuals who contributed to that set of

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1 annual doses were exposed at facilities other  
2 than Santa Susana.

3 But then I did one more thing and  
4 I said, "Let me look at the exposures that 59  
5 people who actually were employed at Santa  
6 Susana received and then look at the other 59  
7 individuals whose exposures occurred at  
8 someplace other" and I found something  
9 interesting. For the 59 people who received  
10 their exposures at Santa Susana, the average  
11 dose -- this is an arithmetic mean -- was 1112  
12 millirem. For the 59 individuals whose  
13 exposure was received at the facilities other  
14 than Santa Susana, the exposure was -- the  
15 average of the arithmetic exposure was 462  
16 millirem. So by including exposures that  
17 occurred at facilities other than Santa  
18 Susana, you're actually diluting. In other  
19 words, the people whose exposure, the 59  
20 people who were exposed at Santa Susana, had  
21 more than two times the average exposure  
22 received by people who were exposed at

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1 facilities other than Santa Susana.

2 Again, when I look back at some of  
3 the statements that were made in OTIB-0077,  
4 the statement was by including exposures  
5 received at other facilities we're basically  
6 upping the exposure. And therefore it is a  
7 claimant favorable issue. It's not the case  
8 at least for 1950 as I pointed out here. By  
9 including exposures of people who were not  
10 employed at Santa Susana you are in fact  
11 diluting the exposure.

12 And I think I'll let Lara and Jim  
13 comment on item three.

14 DR. NETON: Well, again, we agree  
15 with you. We have to take this under  
16 consideration when we reanalyze the data of  
17 the coworker model in TIB-77 and also we need  
18 to reevaluate whether or not, in some of the  
19 earlier years at least, the remaining data are  
20 sufficient to have a valid coworker model  
21 keeping in mind that the site is already an  
22 SEC Site prior to 1964. We would like to be

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1 able to reconstruct external exposures. But  
2 if there aren't sufficient remaining data  
3 points, it might be the case that we can't.

4 DR. BEHLING: Okay. That brings  
5 us to issue number four and that's the  
6 interpretation of length and the potential for  
7 unaccounted dose. Here I looked at the data  
8 and again the database is very, very large.  
9 As I'd mentioned, you're talking about 5800  
10 individuals who are identified in that  
11 database. And just to scroll down for each  
12 year you realize you're dealing -- if you do  
13 this manually, it's a very tedious job.

14 But what I did was I looked at at  
15 least a sampling of individuals and in this  
16 case, I looked at people whose employment  
17 record suggested a certain number of years of  
18 work at Santa Susana. And then I looked at  
19 those years and said, okay, to what extent is  
20 even the doses assigned for their employment  
21 at Santa Susana complete?

22 Because if I looked at the blanks

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1 for other facilities, it's possible that they  
2 may have been employed elsewhere for  
3 intermittent periods of time where there was  
4 no need to monitor them and there was no need  
5 for exposure. And so therefore when I see a  
6 blank, it's really a question of is this a  
7 period of time where that individual was not  
8 exposed and perhaps didn't need to be  
9 monitored or is it still an issue that  
10 involved missing records?

11 But that question, I wanted to  
12 avoid having to deal with that by focusing  
13 only on those years during which a given  
14 individual was in fact employed at Santa  
15 Susana and then looking at the exposure  
16 record. And for that, I looked at worker  
17 number 19 and worker number 1 right up at the  
18 top of the list. And those workers are  
19 identified by exposure and year in table  
20 number -- no, it's actually not a table. It's  
21 on page 15. I didn't even identify it as a  
22 table.

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1           But you will see a series of  
2 blanks. In the case of worker number 19 you  
3 will see he was employed from '57 through 1975  
4 at Santa Susana. And yet we have some very,  
5 very high doses in the first recorded year of  
6 dose. In 1958 he received 2950 millirem.

7           The next year 1960 he was 2410 and  
8 in fact there's a typo in there. It should be  
9 '59 and so forth. But then you skip to 1965,  
10 again that's bracketed. In 1964, he had 4240  
11 millirem and for 1965, there's a blank and  
12 there's another blank in 1970 among all these  
13 exposures.

14           And the question that comes to  
15 mind is, what happened in those years? Is  
16 this truly a situation where the individual  
17 was perhaps not monitored because he didn't  
18 need to be or are we looking at incomplete or  
19 gaps in the dosimetry data even for people who  
20 worked at Santa Susana?

21           And the same thing again applies  
22 to worker number 1 where we know that he

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1 worked from 1946 to 1982 as an employee of  
2 Santa Susana. But for the first four years  
3 there are blanks. And then you see,  
4 obviously, exposures for a number of years and  
5 then that's followed by three more blanks and  
6 so on and so on.

7 And again the question that comes  
8 to mind is was this individual truly not  
9 monitored and therefore he didn't need to be  
10 monitored and there's no gaps in the data. Or  
11 was this -- or is this really a question of  
12 not necessarily having all of the data that we  
13 should have on behalf of that individual?

14 Normally, I would look at the  
15 database and if I saw a zero there, it would  
16 at least appear that the individual was  
17 monitored but perhaps his exposure was below  
18 the limits of detection for that whole year.  
19 And therefore at least we can reasonably  
20 conclude that there was no significant  
21 exposure other than perhaps a missing dose  
22 that needs to be assigned. When I see a

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1 blank, I do have to question whether or not  
2 there was a -- this is a case of missing  
3 dosimetry data.

4 I guess at this point if you go to  
5 page 16, I have to say that the existence of  
6 blanks raises really two interrelated  
7 questions. And the more significant question  
8 -- I think I already addressed question one --  
9 is really a question of gaps or missing data.

10 But question number two, what do  
11 we do for workers number 1 and number 19?  
12 Because if we were to -- let's assume here  
13 both of those workers were claimants. What  
14 would we do in terms of their dose  
15 reconstruction if we encountered these gaps?  
16 Suppose workers 1 and 19 had a claim with  
17 NIOSH and we needed to somehow address the  
18 issue of missing data. We would in essence,  
19 based on our current protocol, assign them the  
20 95th percentile dose based on our guidance  
21 that we have to adhere to, and yet these are  
22 people off the coworker model. So we're

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1 looking at this circular problem here where  
2 the coworker data model is in effect possibly  
3 deficient and needs to be addressed because,  
4 as I said, if these individuals were  
5 themselves claimants we would have to fill in  
6 those gaps and we would have fill in with the  
7 95th percentile coworker model which in  
8 essence is a circular form of reasoning.

9 DR. NETON: Hans, this is Jim. I  
10 don't know that that's necessarily true. I  
11 think the external dosimetry implementation  
12 guide speaks of other ways of imputing those  
13 other than the coworker model, and that is  
14 some of the more traditional techniques that  
15 have been used in other studies such as nearby  
16 doses where if you clearly have a case in  
17 front of you and the guy had exactly the same  
18 job description for three years running and  
19 the middle piece is missing you could use  
20 those two endpoints to come up with some sort  
21 of a estimate of what that missing dose was in  
22 the middle period.

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1           On the other hand, if clearly the  
2           guy changed job titles and was working in a  
3           potentially non-radiological operation we have  
4           to rethink how we would fill that in. So  
5           there are techniques other than just purely  
6           using the coworker model.

7           DR. BEHLING: As I said, I don't  
8           know. If you look at Implementation Guide 1  
9           they offer you multiple things such as you  
10          would assign the maximum dose as an upper  
11          limit --

12          DR. NETON: Right.

13          DR. BEHLING: -- that was a  
14          permissible dose at the time. Or you would  
15          interpolate between the two adjacent exposures  
16          for years and somehow or other assign a value.

17          But in any case, I'm looking at some of the  
18          gaps here, these blanks, and I'm questioning  
19          whether or not these are truly periods of time  
20          when the individual was not exposed to  
21          radiation, therefore there was no recorded  
22          exposure, or whether these are gaps in our

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1 dosimetry data.

2 DR. NETON: Right.

3 MR. BERONJA: Hans, this is Greg.

4 One other side issue that I'm just looking  
5 at, worker number 1. Now are you saying that  
6 this worker worked at Santa Susana from '46  
7 until '82?

8 DR. BEHLING: That's what the tab  
9 one indicates on the spreadsheet, yes.

10 MR. BERONJA: And this person got  
11 some reasonable doses from '50 through '54.

12 DR. BEHLING: Yes.

13 MR. BERONJA: So before the  
14 covered period.

15 DR. BEHLING: Yes.

16 MR. BERONJA: I mean I don't know  
17 how that occurs. It's just suspicious one way  
18 or the other.

19 DR. BEHLING: I mean if you look  
20 at worker 19 he had some very high doses from  
21 '59 to '64, you know, 2900, 2400 and in 1964  
22 4240 millirem as an annual exposure. So these

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1 were exposures that he received at Santa  
2 Susana, at least, according -- if the tab one  
3 that is the employment period that defines,  
4 for worker 19, '57 through '75, if that's  
5 correct, then these are exposures he received  
6 at Santa Susana.

7 MR. STIVER: Well, you know, Greg  
8 has a point. If we're -- pretty good data  
9 that would indicate there wasn't any potential  
10 for an exposure in those early years and he  
11 has those doses, then maybe these are from  
12 another facility that were then brought back  
13 in. So it could be that this tab one data is  
14 suspect.

15 DR. BEHLING: Well, I'm not so  
16 sure. But at least if we at this point assume  
17 that the demographics defined in tab one are  
18 correct -- that is the use of employment at  
19 Santa Susana is correct -- then these  
20 exposures are attributable to the Santa Susana  
21 facility.

22 MR. BERONJA: Yes. Could have

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1       been at Downey.

2                   MR. STIVER:    But I think that the

3       --

4                   (Simultaneous speaking.)

5                   MR. STIVER:    Yes.   Okay.

6                   DR.   HUGHES:       This data would  
7       encompass all four sites.

8                   MR. STIVER:    There's a tendency to  
9       focus on Area IV.

10                  DR. NETON:    Right.

11                  MR. BERONJA:   But the SEC for the  
12       four areas is beginning -- what is it for  
13       Downey?

14                  MR. STIVER:    It's based for the  
15       entire period.  It's '48 though --

16                  DR. HUGHES:    Forty-eight.

17                  MR. BERONJA:   Okay.

18                  DR. NETON:    The whole time period.

19                  MR. BERONJA:   Okay.

20                  MS. KLEA:     Hans, this is Bonnie.  
21       Do you have any locations or projects that  
22       would identify worker 19 or worker 1?

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1 DR. BEHLING: No, I don't. As I  
2 said, at this point, Bonnie, I only have what  
3 the database's spreadsheets provide me with  
4 that the Boice people put together to come up  
5 with their retroactive mortality study. Other  
6 than the fact that these people would have  
7 been employed at Boice, but I assume they were  
8 employed at Santa Susana during those years  
9 that's under tab one.

10 If you want to, you can go on the  
11 O: drive, Bonnie, and identify what these  
12 individuals' data represent, demographic data  
13 and dosimetry data. I've taken that dataset  
14 at face value without questioning their  
15 accuracy.

16 MS. KLEA: Okay. Would this be  
17 external or internal monitoring?

18 DR. BEHLING: This is only  
19 external monitoring.

20 MS. KLEA: Okay. Because I read  
21 that there was no internal monitoring done for  
22 the SRE in '59. Would you say that these high

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1 doses for worker 19 would indicate accidents?

2 DR. BEHLING: Well, it doesn't  
3 have to. I mean in those early years the  
4 exposure doses or the limits for exposure  
5 doses was 3 rem per quarter and, of course,  
6 5(N-18) and, of course, not for 1 and 19, but  
7 the other ones that I showed in the previous  
8 one in table five, you know, they're -- no,  
9 actually four, those are termination doses.  
10 We look at 11,000 millirem. Those are clearly  
11 exposures not received in a single year, but  
12 obviously in a number of years and we don't  
13 know how many years that termination report  
14 really represents.

15 MS. KLEA: Thank you.

16 DR. NETON: Well, I think from our  
17 perspective SC&A has pointed out something  
18 that we probably need to go back and do a  
19 little more homework on and see if we can  
20 evaluate a little better what the existence of  
21 these blanks actually entails.

22 DR. BEHLING: Okay. I think if

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1       there are no other comments we can go to the  
2       last one and that is we will come full circle  
3       again on the issue of neutrons. In issue one  
4       I had suggested that perhaps NIOSH  
5       misinterpreted the database where the total  
6       dose was in fact a combination of photons and  
7       neutrons. And if I recall, Jim's comments  
8       were yes, we agree that the neutrons were  
9       separate from the photons in tab two.

10               So at this point I will only  
11       address the fact that now if we conclude that  
12       the neutrons can be separated as they are in  
13       tab three, we can also make the proper  
14       adjustments. And the adjustment we have to  
15       address is can we reasonably conclude that the  
16       NTA methodology that was used for neutron  
17       exposures can be accepted based on what we  
18       expect the neutron energies to be where the  
19       NTA film -- the limitations of NTA film have  
20       been addressed. If there's some reasonable  
21       assumptions that can be made, how the NTA film  
22       dosimeters were in fact calibrated?

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1                   But at a minimum, we do have to at  
2                   least address the issue of quality factors  
3                   that brings those neutron exposures in  
4                   compliance with the ICRP 60 values, Q values.

5                   So that would be at a minimum a recommended  
6                   change.

7                   DR. NETON:   Okay.   And I mentioned  
8                   earlier that we have a draft report, I have it  
9                   in my hand, that describes in outline -- well,  
10                  it's not an outline.   It's a full report -- it  
11                  has not been reviewed -- about how we would  
12                  approach looking at neutron data at Santa  
13                  Susana.   And I can briefly describe our  
14                  rationale.

15                  You have to think of the neutron  
16                  monitoring there in three distinct periods.  
17                  That's 1955 to 1970, 1970 to '87 and then  
18                  after 1987.   Between 1955 and 1970, Santa  
19                  Susana relied exclusively on NTA film which  
20                  has been well established in this project or  
21                  this program to be essentially unresponsive to  
22                  neutrons,   thermal neutrons,   lower energy

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1 neutrons. And that's typically considered to  
2 be -- as a cut point possibly.

3 So because of that there's no  
4 ability to determine what that means other  
5 than the fact this NTA film was exposed to  
6 neutrons greater than 500. So we would use  
7 that at face value and assign that to fast  
8 neutrons.

9 To get a handle on the thermal  
10 component, it turns out that in the site  
11 research database there are surveys that were  
12 taken at the plant between 1963 and 1971 where  
13 they used orbital neutron measurement devices  
14 that were capable of discriminating between  
15 thermal and fast neutrons. This is all in the  
16 report. I can't -- I'm not going to go into  
17 all the details. But the SRDB reference  
18 numbers in this report that have established  
19 ratios that vary considerably between '63 and  
20 '71. I'm looking at a table where the fast to  
21 thermal neutron ratios varied anywhere from  
22 6.8 to 162. Actually as low as 4.0 to 162.

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1 So they're all over the place. But what it  
2 really tells us is that the majority of the  
3 neutrons were the higher energy neutrons, not  
4 the thermal neutrons.

5 If one uses the four as a lower  
6 bound, it would indicate or at least imply  
7 that a correction of about 20 percent would be  
8 appropriate to apply to any measure of  
9 neutrons using the NTA film. That is you just  
10 would take whatever was measured on the NTA  
11 film and increase it by 20 percent and find  
12 the appropriate quality factor. That's up  
13 through 1970.

14 DR. MAURO: Jim, this is John  
15 Mauro.

16 DR. NETON: Yes.

17 DR. MAURO: I have to take a  
18 little exception to the way you've parsed this  
19 and it's almost cautionary in terms of the  
20 1964 date because I keep thinking in those  
21 terms. What we're saying here is you're using  
22 NTA film right through '64-'65 right up until,

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1 it sounds like up to 1970.

2 DR. NETON: Right.

3 DR. MAURO: And you're thinking in  
4 terms of breaking it between thermal and high  
5 energy. But the real break point is 1 MeV.  
6 Beginning at 1 MeV and as you move down, what  
7 I'm getting at is having a full appreciation  
8 of the energy distribution of a neutron around  
9 the 1 MeV down to 500 KeV and then from 500  
10 down to thermal there's a lot of distance.

11 And the way in which you're going  
12 to develop your coworker model using the  
13 knowledge of, or some knowledge, of the energy  
14 spectrum post '64 goes towards the SEC  
15 boundary. In other words, if you feel  
16 confident that using the NTA film and you have  
17 sufficient information on the energy  
18 distribution of the field that workers  
19 experienced, you're in the position to use the  
20 NTA film and build a coworker model and  
21 reconstruct external neutron exposures to all  
22 the organs right through '64 and on.

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1           And then, of course, after, I  
2       guess 1970, you may have moved on to even a  
3       better dosimeter for neutrons. But I think  
4       it's more than just separating thermal from  
5       high energy. I think it's really having an  
6       appreciation of the full energy distribution.

7           DR. NETON:       And, John, I'm  
8       paraphrasing very loosely this report. So I'm  
9       just trying to give you a flavor that we do  
10      have an energy spectrum of some type and I  
11      appreciate your concern about the completeness  
12      of that energy spectrum delineation. I don't  
13      have in front of me the actual instruments  
14      that were used and their ability, you know,  
15      what the actual readouts were. But I do  
16      appreciate what you're saying.

17           DR. MAURO: Yes. I --

18           DR. BEHLING: Just a comment John,  
19      too. When we look at Hanford as a facility  
20      that would provide us with perhaps some  
21      surrogate data, we do in fact when we look now  
22      at Hanford they have essentially abandoned the

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1 NTA dosimetry data during the time period when  
2 it was used. And it's only from 1970 on when  
3 the TLND or the albedo TLD badge was used that  
4 we accept the ability to actually measure  
5 neutrons. So it may prove to be a time frame  
6 that goes beyond 1964 and perhaps up to 1970  
7 that may be driven by the inability to really  
8 provide accurate neutron exposure data.

9 DR. MAURO: I think that's an  
10 extremely important point, Hans, and that is  
11 if there is precedent whereby the SEC period,  
12 for example at Hanford, is driven by concerns  
13 on the energy distribution for neutrons and  
14 the inability to build a coworker model using  
15 NTA film. I'm not sure if that's the entire  
16 reason why the period of coverage for Hanford  
17 was extended. But if that is, I think that  
18 has to be factored in here also.

19 I mean what we're looking at and I  
20 always zero in looking at the '64 might not  
21 hold up.

22 DR. NETON: But you're comparing

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1 apples and oranges here. I mean Hanford is  
2 one site, a very complicated site with  
3 different types of reactors. There were very  
4 few reactors here. I mean there were a  
5 couple.

6 DR. MAURO: Okay.

7 DR. NETON: And we have at least -  
8 - I can't speak to the number of these  
9 measurements, but there are certainly several  
10 for each year it appears. They were taken at  
11 various locations around these reactors. So  
12 it's really going to speak to the robustness  
13 of this neutron survey data that I'm bringing  
14 up and maybe it was premature to even throw  
15 this on the table because I don't have all the  
16 facts in front of me here.

17 DR. MAURO: My sense is that if  
18 anything about the external coworker model  
19 that is where these are soft and where you  
20 might -- I know you can clean up the photon  
21 problem.

22 DR. NETON: Right.

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1 DR. MAURO: I understand that. To  
2 me, when you do that you're going to be -- you  
3 probably will still have -- even though we do  
4 have the blank issue, we have the termination  
5 report issue and you have the protocols and  
6 the mechanics in place to fix that. So we'll  
7 certainly look at that if the Board -- Work  
8 Group asks us to look at that.

9 But I could see that the place  
10 where, at least with regard to external, the  
11 1964 date could actually be in jeopardy as  
12 being the cutoff point if things are soft with  
13 regard to neutron dosimetry.

14 DR. NETON: And I would say wait.  
15 Reserve judgment until you see our report.

16 DR. MAURO: Yes, I understand.  
17 I'm just putting the spotlight on that one  
18 because I could see something.

19 DR. NETON: I would still say  
20 though if you have a reasonable termination of  
21 the spectrum of the neutron and you have an  
22 NTA measurement you can account for the

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1 efficiency of the badge.

2 DR. MAURO: I agree with you  
3 completely.

4 DR. NETON: Okay. So let's wait  
5 and see the quality of the survey measurements  
6 that are taken around the reactors.

7 Just to finish the picture, after  
8 1970 Santa Susana switched vendors or procured  
9 the services of Landauer who provided NTA film  
10 again as well. But in this situation they  
11 added a cadmium filter to the film badge. And  
12 the idea was they could quantitatively  
13 estimate the lower energy neutrons, the  
14 thermals, using the difference between the  
15 exposure under the cadmium and the lead  
16 filters.

17 And I don't want to get into all  
18 the details about how they did this. It was  
19 actually published in Health Physics. So  
20 that's what they were using to correct those  
21 values from 1970 to 1987. That would be our  
22 dose in that time period possibly supplemented

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1 by addition neutron survey data if it were  
2 available.

3 After 1987, it is our belief that  
4 the potential for neutron exposure went away  
5 and there was no requirement to monitor  
6 workers after that date.

7 That's a brief summary of where  
8 we're going. Again, I would reserve judgment  
9 until we can provide you the actual report  
10 with real data. You can dig into the SRDB and  
11 look at the survey data, independently  
12 evaluate the robustness of the dataset  
13 yourselves.

14 We do have a plan or path forward.

15 MR. KATZ: Mike.

16 CHAIRMAN GIBSON: Just as long as  
17 -- it's been mentioned several times, but as  
18 long as it's on the table, the issue right  
19 now, it would be good to -- they don't have  
20 anything to do right now at SC&A with respect  
21 to this. But we might just go ahead and task  
22 them with when the internal model comes out if

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1 they can get to it right away evaluate that.

2 Is that okay with you?

3 DR. NETON: Is that the internal  
4 model or the external?

5 MR. STIVER: There also the issue  
6 of the internal, the dataset that's going to  
7 be used for it, and maybe you could get  
8 started on that pretty quickly.

9 MR. KATZ: Is that okay with the  
10 Work Group to task us --

11 MEMBER BEACH: It was one of the  
12 things I was writing down. So you can start  
13 with the dataset right away?

14 MR. STIVER: The dataset that's in  
15 tab three that has been provided.

16 MEMBER BEACH: Okay.

17 MR. STIVER: We can begin  
18 evaluating that pretty significantly in the  
19 coworker model.

20 DR. HUGHES: What you are  
21 referring to as tab three I think is what the  
22 external data came from. That's not --

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1 MR. STIVER: I may be mistaken.

2 DR. NETON: I was a little  
3 concerned about SC&A developing their own  
4 model in advance of our model.

5 MR. KATZ: No. They can evaluate  
6 it all in one when they have the internal  
7 model in front of them. They can take up the  
8 data that supports it at that time.

9 MR. STIVER: I think it would be  
10 kind of analogous to what we did with the  
11 external model. We just looked for  
12 suitability without really trying to develop  
13 any sort of model parameters on our own. And  
14 then when the model does come out, then we  
15 could look at that.

16 MR. KATZ: Regardless, I think you  
17 can report on the model and the data  
18 underlying it in an integrated fashion in one  
19 report.

20 MR. STIVER: Yes.

21 DR. NETON: Prior to release of  
22 our internal model?

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1                   MR. KATZ:     No, no.     After you  
2     release your internal model, that's when they  
3     would take up reviewing the model.

4                   DR. NETON:   That's fine.

5                   MR. KATZ:     If they've done some  
6     homework on the database prior to that, that's  
7     fine.    But they just integrate it into one  
8     report and --

9                   DR. NETON:   I'm fine with that.

10                  MR. KATZ:     -- respond once it's  
11     all --

12                  MR. STIVER:   Yes.    We wouldn't be  
13     trying to do --

14                  DR. NETON:   You know, it's awkward  
15     for SC&A to sort of characterize the database  
16     and say this is inadequate --

17                  MR. KATZ:     No, there would be no  
18     report.

19                  DR. NETON:     -- meanwhile we're  
20     still in the process of putting our best  
21     effort on the table.

22                  MR. KATZ:     There will be no report

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1 until they have your final model to review.

2 DR. NETON: That's fine.

3 MR. BERONJA: Hans, before you go  
4 on, I guess I had one question. I think Lara  
5 had clarified something. I think I had asked  
6 before if this was based on Santa Susana and  
7 all four sites or whether it was based on Area  
8 IV. And I think it's probably evident now  
9 that it's really based on all four sites. I  
10 guess my next question then, is it appropriate  
11 for a coworker model to be developed for four  
12 sites?

13 DR. NETON: Yes. You raise a very  
14 good question.

15 MR. BERONJA: Rather than a  
16 coworker model being developed for each site.

17 DR. NETON: We need to go back and  
18 make sure that that is true that it can be  
19 used for that. You're right. Because there  
20 could be -- what you're suggesting and it's  
21 possible that there could be underlying  
22 distribution --

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1 MR. BERONJA: Yes.

2 DR. NETON: -- that are different  
3 among the different sites. I think that's  
4 hard enough to prove that for a single site  
5 let alone multiple sites.

6 MR. BERONJA: I'm sure there's  
7 much less data at the other three sites than  
8 Area IV.

9 DR. NETON: So it may or may not  
10 affect --

11 DR. HUGHES: No, it's not true.  
12 It's just that two of those sites are SECs.  
13 So although -- it goes to 1948 but what we'll  
14 potentially be looking at is for the non SEC  
15 period mostly. So we would only actually look  
16 at two sites. The third one is the Area IV.

17 DR. NETON: Yes. Right.

18 DR. HUGHES: -- not to mention any  
19 partial dose reconstruction it might be used  
20 for in earlier period.

21 MR. STIVER: There would still be  
22 the issue of --

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1 DR. NETON: We still need to go  
2 back and look at what's remaining and see how  
3 the combination of those site data in one  
4 database could affect the viability,  
5 suitability model.

6 MEMBER BEACH: Will that be in  
7 your coworker report then?

8 DR. NETON: That needs to be  
9 explained in the model.

10 MEMBER BEACH: Yes.

11 DR. BEHLING: This is Hans. In  
12 light of the fact that NIOSH is still working  
13 on the internal coworker model the question I  
14 see as a problem is that when you deal with  
15 the problems that we face for the external  
16 model where obviously data was taken involving  
17 workers exposure outside before or after their  
18 employment. The problem with internal is that  
19 suppose a person walks into Santa Susana in  
20 1956 and he may not get a bioassay done on him  
21 for a year and you don't know at this point  
22 whether perhaps that bioassay represents

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1 internal exposure received at Santa Susana  
2 versus before he got there at another  
3 facility. And so this is a potential problem  
4 that I just want to throw up as a caution flag  
5 in saying how do we know how to read internal  
6 exposure, segregate exposure received at Santa  
7 Susana versus elsewhere.

8 DR. NETON: Hans, that would be an  
9 issue at virtually any site we have a coworker  
10 model for and it's not something unique for  
11 this facility.

12 DR. BEHLING: Well, sometimes you  
13 can segregate it based on the baseline  
14 bioassay like a baseline whole body count or  
15 something that says you came to us with a  
16 certain body burden and we're not going to  
17 take credit for that and so forth. But in the  
18 older days often times there were no bioassays  
19 for years and then all of a sudden you  
20 introduce it.

21 But as a minimum we do -- I'm sure  
22 the internal database for the Boice probably

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1 also identifies bioassay data that precedes  
2 their employment or postdates their employment  
3 at Santa Susana. And I would hope that we  
4 could possibly remove that and not enter that  
5 or develop a coworker model that suffers from  
6 the same problems that the external coworker  
7 model has.

8 DR. NETON: That's a good point.  
9 I mean it's something that we certainly need  
10 to consider.

11 MEMBER BEACH: So, Mike, I have a  
12 question. Will we need to do a formal tasking  
13 for SC&A to review the NTA film issue that's  
14 being developed? I think it's closer to  
15 coming out than the internal.

16 MR. STIVER: It sounds like the  
17 NTA film paper is just about ready and it  
18 might be better to start with that if it's  
19 going to be coming out.

20 MEMBER BEACH: Do we have to  
21 formally task on that one as well?

22 MR. KATZ: You are so tasked.

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1 MR. STIVER: That's good.

2 MEMBER SCHOFIELD: It seems like  
3 the NTA film issue is going to have broad  
4 implications for a lot of facilities and  
5 sites. It may be almost generically.

6 MR. STIVER: Yes. Could it be  
7 applicable to or far-reaching beyond Santa  
8 Susana?

9 DR. NETON: It's really on a case-  
10 by-case basis with the NTA film I think.

11 MEMBER MUNN: It is being covered  
12 on many other sites.

13 DR. NETON: Yes. I mean we have  
14 gone through this on like 12 where we actually  
15 created spectra for the energy and account for  
16 the difference.

17 MEMBER SCHOFIELD: What I was  
18 thinking is the different energy, some of them  
19 you're going to see over and over at different  
20 facilities to bring it into the questions here  
21 in some of this where we run into at other  
22 facilities where that same question is coming

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1 up about roughly the same energy level.

2 DR. NETON: Yes. The problem with  
3 that is that it tends to vary quite a bit. We  
4 have this situation going on at Mound right  
5 now. What is the energy spectrum at Mound?  
6 And it's totally dependent upon the shielding,  
7 the type of shielding, the orientation.

8 MR. STIVER: Each source term is  
9 going to essentially have its own spectrum,  
10 isn't it?

11 DR. NETON: Yes. And you're  
12 right. At one point I thought we could have a  
13 generic model for NTA film for, say, a reactor  
14 facility. And we had our people look into  
15 this and it just turned to be a very difficult  
16 --

17 MEMBER BEACH: There's too much  
18 variation.

19 DR. NETON: -- a bounding value on  
20 it.

21 MR. STIVER: Yes.

22 DR. NETON: And it was a very,

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1 very difficult process.

2 MR. STIVER: Site specific, yes.

3 DR. NETON: Years ago we tried and  
4 so far we've not been successful putting a  
5 generic neutron spectrum.

6 MEMBER SCHOFIELD: I withdraw my  
7 comment.

8 DR. NETON: I think you made a  
9 good comment. I wish we could do that.

10 MEMBER BEACH: I have another  
11 question for NIOSH. In Lara's report, it  
12 talked about all of the different products  
13 that they received from SC&A. Are there any of  
14 those that you'll be issuing any memos or  
15 White Papers based on SC&A's reports that you  
16 can talk about? There were four items.

17 MR. STIVER: One is the Petition  
18 Evaluation Report update.

19 MEMBER BEACH: Yes.

20 MR. STIVER: The addendum to the  
21 Site Profile and then the others were --

22 MEMBER BEACH: One was the staff.

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1 DR. HUGHES: Well, the external  
2 coworker model will definitely be based on  
3 what we just all discussed.

4 DR. NETON: I think right now I  
5 see three issues that we need to provide. One  
6 is the revised external coworker model. One  
7 is the complete internal coworker model. And  
8 the third one has to do with the explanation  
9 of how we're going to do environmental doses.  
10 Those are the three in my mind unless I'm  
11 missing something.

12 MR. STIVER: And the NTA film --  
13 within the external coworker model.

14 DR. NETON: Well, there's four  
15 actually, four possible.

16 MEMBER BEACH: Thanks. I just  
17 wanted to make sure I didn't miss anything.  
18 Thanks.

19 MR. STIVER: Yes, that's good.

20 MEMBER BEACH: Thanks.

21 MR. STIVER: Very good.

22 DR. NETON: If you sit for a few

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1 Working Group meetings, they all kind of blur  
2 together. So go back to Hans. Is that right?

3 MR. KATZ: Is that it, Hans?

4 DR. BEHLING: Yes, I think we  
5 covered the points that I identified in my  
6 White Paper and unless somebody else has a  
7 specific question, I think I'm pretty through  
8 with the presentation.

9 MS. KLEA: Hans, this is Bonnie.  
10 Are the mixed fission products -- now it was  
11 pointed out that they were unspecified as to  
12 which radionuclides were in them. Is that as  
13 important as the neutron issue?

14 DR. BEHLING: I can't really  
15 address that in the coworker model because  
16 we're only dealing with penetrating radiation.

17 MS. KLEA: Okay.

18 DR. BEHLING: Meaning external  
19 exposure to hard photons that obviously  
20 penetrate at least 1,000 millirems of  
21 centimeter square filter and register as such.

22 So I can't really comment as to whether or

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1 not that is complicated by issues surrounding  
2 the mixed fission products.

3 That might -- you know when you  
4 talk about mixed fission products we have to  
5 always identify whether they're talking about  
6 external versus internal. Some fission  
7 products like strontium-90 are only internal  
8 issues and not external. Some are both  
9 internal and external.

10 MS. KLEA: Okay. Thank you.

11 MR. KATZ: Thanks for your good  
12 work, Hans. Anything else?

13 DR. BEHLING: Do you think you  
14 guys are ready for lunch?

15 CHAIRMAN GIBSON: Anything else  
16 before we break for lunch?

17 MR. KATZ: Are you ready for  
18 lunch, Hans?

19 DR. BEHLING: I don't eat lunch.

20 MR. STIVER: I think we're pretty  
21 well summed up now.

22 MR. KATZ: What is left on the

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1 agenda? We have the actions forward for SC&A  
2 and for DCAS.

3 MR. STIVER: We've discussed all  
4 the issues that SC&A has.

5 CHAIRMAN GIBSON: Make sure we've  
6 discussed new issues that haven't been raised.  
7 I mean we're kind of making them altogether.  
8 Just to briefly go over that to make sure  
9 that --

10 MR. STIVER: No, we don't have any  
11 more than what we've already presented.

12 MR. KATZ: I think that's the  
13 menu.

14 MEMBER BEACH: Well, and no, this  
15 isn't on the menu, but because we haven't met  
16 for a year Site Profile issues. I know we had  
17 a Site Profile matrix. Where -- I guess I'm  
18 kind of wondering --

19 MR. STIVER: As of last year we  
20 went through the Site Profile and resolved  
21 most of the issues. The others that weren't  
22 resolved were put into this SEC profile.

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1                   MEMBER BEACH:    So they were path  
2    forward.

3                   MR. STIVER:        So they were moved  
4    forward.

5                   MEMBER BEACH:    Okay.

6                   MR. STIVER:        And we've discussed  
7    all those today.

8                   MEMBER BEACH:    Before me I have  
9    three matrices and trying to cash all of  
10   what's there.

11                  MR. STIVER:        I understand.    They  
12    get kind of confusing.    Definitely.    But I  
13    think the real remaining issue from the issue  
14    matrix was the environmental model.

15                  MEMBER BEACH:    Okay.    Great.

16                  MEMBER        SCHOFIELD:            The  
17    environmental one that is actually covered in  
18    work you've already done, right?    Is that --  
19    my understanding correct?

20                  MR. STIVER:        This is really a  
21    NIOSH item to continue developing their  
22    environmental.

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1                   MEMBER SCHOFIELD:    You guys are  
2                   already working on that issue.

3                   MR. STIVER:    It just hasn't been -  
4                   - it's not completed yet.

5                   MEMBER SCHOFIELD:    Okay.

6                   DR. NETON:    SC&A essentially was  
7                   questioning the applicability of later data  
8                   and going back in time to --

9                   MR. STIVER:    Back extrapolation  
10                  issue.

11                  DR. NETON:    -- back extrapolation,  
12                  yes.

13                  MEMBER SCHOFIELD:    Okay.    I just  
14                  wanted to make sure I understand that  
15                  correctly.

16                  MR. STIVER:    Let me just kind of  
17                  summarize what I have so far and make sure  
18                  we're all on the playing field.  As far as the  
19                  environmental models that NIOSH was going to  
20                  continue working on that and at some future  
21                  date then provide a product related to that.

22                  We were to review the internal

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1 coworker model and the underlying datasets.

2 And NIOSH is also going to look at  
3 revising and cleaning up the database of the  
4 external model and then there will be some  
5 determination as to whether the remaining data  
6 are still suitable for the external coworker  
7 model. It's going to be kind of far down the  
8 road, but I suppose at that point that it  
9 would need to be reviewed as well at that time  
10 when that final database is provided.

11 And related to the external model  
12 would be our review of the NIOSH paper on the  
13 NTA issues. That's what I have as work  
14 things.

15 MEMBER BEACH: That's what I have.

16 DR. MAURO: This is John. Just  
17 for clarification, and, Ted, you could help us  
18 with this, it sounds like with regard to the  
19 material, the White Papers, or the material  
20 that will be coming from NIOSH in the future  
21 whether it's environmental, cleaning up the  
22 external including both photon and neutron,

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1 and of course eventually the coworker model  
2 for internal, all of those will take some form  
3 as a report coming out of NIOSH. Are we  
4 getting the task at this time to review them  
5 when they come out or do we wait direction?

6 MR. KATZ: No. That's what we  
7 said already that you will review them as  
8 they're released.

9 DR. MAURO: Very good. I just  
10 wanted to make sure I understood that.

11 And the other thing is the only  
12 action item and correct me if I'm wrong that  
13 we actually have right now that we're going to  
14 move forward with is to start to look at the  
15 internal database, not write any reports, but  
16 start the process of reviewing it which would  
17 allow us to have a leg up when NIOSH's  
18 coworker model for internal comes out.

19 MR. KATZ: Right. It's fine for  
20 you to start your homework there.

21 DR. MAURO: Very good. Okay. I  
22 think that's it in terms of SC&A's authorized

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1 work.

2 MR. STIVER: That's how I see it,  
3 John. I think we're on the same page here.

4 DR. MAURO: Good. Because you  
5 know very often it's easy -- I just want to  
6 make sure what's your -- so we could actually  
7 move forward with regard to internal. But  
8 we're going to sit tight regarding the other  
9 items.

10 MR. STIVER: Until -- as they're  
11 produced.

12 DR. MAURO: As they're produced,  
13 yes.

14 MR. KATZ: Right. And as current  
15 tradition goes just a brief memo from you,  
16 email from you, listing out the action items  
17 from SC&A. Same from DCAS. That way everyone  
18 has a paper record of the action items.

19 DR. MAURO: Very good.

20 MR. KATZ: Is there more, Mike?

21 CHAIRMAN GIBSON: Do we need to  
22 break for lunch or just adjourn?

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1 MR. KATZ: I think we can adjourn.

2 MR. STIVER: Why don't we just go  
3 ahead and wrap things up?

4 CHAIRMAN GIBSON: Okay.

5 MR. KATZ: Thank you everybody for  
6 your hard work this morning.

7 DR. MAURO: Bye-bye everybody.

8 MS. KLEA: Are we done for the  
9 day?

10 MR. KATZ: Yes, we are done,  
11 Bonnie. Thank you.

12 MS. KLEA: Thanks everyone.

13 MR. KATZ: Thanks for your  
14 participation. Off the record.

15 (Whereupon, at 12:20 p.m., the  
16 above-entitled matter was concluded.)

17

18

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