

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

convenes the

ADVISORY BOARD ON
RADIATION AND WORKER HEALTH

VOLUME I

The verbatim transcript of the Meeting of the
Advisory Board on Radiation and Worker Health held
at the Washington Court Hotel, Washington, D.C.,
on Wednesday, February 13, 2002.

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(By Group, in Alphabetical Order)

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P R O C E E D I N G S

8:31 a.m.

1
2
3 **DR. ZIEMER:** Good morning, everyone. I want
4 to officially open the second meeting of the
5 Advisory Board on Radiation and Worker Health.
6 The Board members are here in the front at the
7 table, and I'm not going to introduce them all.
8 They were introduced last time. For members of
9 the public, the names of the Board members and
10 the support staff are on the tents, as they are
11 called, just in front of each person.

12 Let the record show that all of the Board
13 members are here, with the exception of Tony
14 Andrade. And if I'm -- I'll ask the court
15 reporter, I'm going to go off record just a
16 moment.

17 (Off the record)

18 **DR. ZIEMER:** Now back on the record, there
19 are sign-up sheets at the entry. If you have not
20 already signed in, please do that. For members
21 of the public, there is also a sign-up sheet if
22 you wish to make public comments during that
23 portion of the agenda. We ask that you sign up
24 simply so we have an idea of how many plan to
25 comment and we can apportion the time

1 accordingly.

2 One instruction for the Board members on the
3 use of the mikes this time. Your mikes have a
4 push-button in the front, and when you speak
5 you'll need to flip that button to the on
6 position and then turn it back off when you're
7 not speaking so that we eliminate feedback.

8 I'd also like to point out to everyone,
9 particularly members of the public, there are
10 handouts on the table over in the far corner, and
11 those handouts represent some -- both background
12 material as well as material that may be used by
13 presenters during the program today and tomorrow.

14 Although I'm not introducing the Board
15 members individually this morning, we do, for the
16 record, want to have our guests -- that is, the
17 members of the public -- introduce themselves,
18 and if you're representing an organization, to
19 identify who that is. This information will
20 likewise be in the public record. So if we could
21 start on the far side and have each person there
22 stand. If you speak loud enough, you may not
23 have to use the mike, but the court reporter will
24 try to get that information. Please identify.
25 Thank you.

1 **MR. ULICNY:** Bill Ulicny with ATL
2 International.

3 **MR. MORALES:** I'm Frank Morales with the
4 Government Accountability Project.

5 **MS. FAIROBENT:** Lynne Fairobent with the
6 American College of Radiology.

7 **MR. BARSS:** Neil Barss, SAIC.

8 **MR. KOTSCH:** Jeff Kotsch. I'm a health
9 physicist with the energy group at Labor.

10 **MR. JOHNSON:** Earl Johnson, representing the
11 ATLC, Atomic Trades and Labor Council, at Oak
12 Ridge.

13 **MS. SAITOW:** I'm Twila Saitow, I'm with
14 NIOSH.

15 **MS. PRESLEY:** Louise Presley, spouse of Bob
16 Presley.

17 **MS. HOMER:** Cori Homer, NIOSH.

18 **DR. ZIEMER:** Okay, and there are some staff
19 members. Maybe the other staff members sitting
20 in the back could go ahead and identify for us
21 also.

22 **MS. HOMOKI-TITUS:** Liz Homoki-Titus, Health
23 and Human Services, General Counsel's Office.

24 **MR. HENSHAW:** Hi, I'm Russ Henshaw, NIOSH,
25 Office of Compensation Analysis and Support.

1 **MR. KATZ:** Ted Katz, NIOSH.

2 **MS. ELLISON:** Chris Ellison, NIOSH.

3 **MR. TAULBEE:** Tim Taulbee, health physicist
4 at NIOSH.

5 **DR. ZIEMER:** Thank you very much. So
6 consider yourselves all introduced at this point.
7 We're glad to have all of you here this morning.

8 You'll note -- oh, make sure you have an
9 agenda. If you haven't already picked one up, I
10 believe there are copies on the back table as
11 well.

12 The first item on our agenda is the approval
13 of the draft minutes of the last meeting. We've
14 set aside a full 30 minutes to do this. I don't
15 think it'll take that long since we don't have
16 the draft minutes. We can debate about them, but
17 due to the fact that there has been such a brief
18 time since our last meeting, it's simply not been
19 feasible for those minutes to be prepared and
20 distributed. So the only comment I will make,
21 and I will -- without objection, we will delay or
22 defer the action on those minutes until our next
23 meeting.

24 The only comment to make is, for members of
25 the public, if you wish to have copies of the

1 minutes, they will be available to you as well.
2 But there is a sign-up book for you on the table
3 so that if you wish to have copies of those draft
4 minutes, please sign up and those will be
5 distributed to you as well, when -- once they are
6 ready.

7 I'm going to ask the staff -- maybe I lost
8 Cori there -- but are there any other
9 announcements that need to be made at this
10 moment? I think not. If others arise, we'll
11 make them as we learn of them.

12 The first item on today's agenda, then, is a
13 program report by Larry Elliott of the NIOSH
14 staff. And Larry, I don't know if you want to
15 come up here and make your report, that'll be
16 fine.

17 **MR. ELLIOTT:** Well, good morning again, and
18 it's a pleasure to be with you all again on such
19 a short turnaround and short response time
20 between meetings. I'm very pleased to be able to
21 meet with you again and to take on the additional
22 business of the Board.

23 Dr. Ziemer and I, in preparation of your
24 agenda, had talked about what's called -- what
25 we're calling a program report, just to let you

1 know a little bit of information about what goes
2 on within the Office of Compensation Analysis and
3 Support at NIOSH. I think I tried to tailor this
4 presentation to give you that understanding, but
5 in the context of where you fit in and what has
6 been going on since the Act was passed, what's
7 been happening at NIOSH in support of
8 implementing our responsibilities. And this
9 information, I hope, will give you a sense of
10 what's forthcoming both for not only for the
11 program but for the Board as well in its work in
12 reviewing dose reconstructions.

13 Frankly, we're running on the ragged edge.
14 Our products that we're now providing to you are
15 preliminary in draft, but in order to achieve our
16 goals, a goal of promulgating two rules by the
17 first -- or by April; I hope it'll be the first
18 of April and not the last part of April. We find
19 ourselves in this dilemma where even our program
20 books for today -- I'm glad nobody showed up
21 yesterday -- we're short-staffed, and we're
22 extremely tasked right now to keep ahead of the
23 curve. And I think that's where the Board's at.
24 I've really put a lot on your shoulders to read
25 through all of the material that we provided and

1 get an understanding of the direction that we're
2 trying to take this program, and make sure that
3 we bring along your understanding of that
4 direction and hear what your thoughts and
5 comments are.

6 So that's the intent and the purpose of this
7 program report, just to kind of set the stage and
8 give you a little bit broader context of
9 understanding about what's going on with this
10 program and NIOSH's responsibilities, and your
11 role in assisting us in those responsibilities.

12 So I'm going to go through a very brief time
13 line here. The Act was passed in October of
14 2000. There were several people that were tasked
15 immediately after its passage to start thinking
16 about NIOSH's responsibilities as they might be
17 delegated through the Department to us. In March
18 of 2001 six people were detailed on special
19 assignment to craft the implementation policy and
20 guidelines and development of the rules.

21 We had a reorganization of NIOSH that was
22 approved in July of last year that established
23 this new Office of Compensation Analysis and
24 Support within NIOSH. That reorganization plan
25 that was approved included 22 full-time

1 equivalent positions, and I'll talk about those
2 in a moment, but just to give you a sense of how
3 few people are working to do such great things on
4 this whole program.

5 We prepared the charter for this Advisory
6 Board and got it through concurrence, and it was
7 signed in August, shortly after OCAS was
8 established. Then we come forward and published
9 our notice of proposed rule-making for guidelines
10 on determining probability of causation, the 42
11 CFR 81 that you reviewed and commented upon last
12 meeting and during your teleconference. We also
13 published an interim final rule on dose
14 reconstruction methodology, and that was
15 presented as 42 CFR 82.

16 And there's a reason why we went in
17 different tracks with these two rules. The
18 notice of proposed rule-making on probability of
19 causation required you, by statute, to review and
20 comment on it. It was open for 30 days for
21 public comment period. We reopened that comment
22 period to coincide with the last Board meeting,
23 retained the docket open for your comments up
24 until February 6th.

25 The rule on dose reconstruction was an

1 interim final, and that regulatory process track
2 allowed us to start working on dose
3 reconstructions immediately while the rule was
4 being finalized, during public comment and to the
5 point of finalization.

6 In October, October 11th, we received the
7 first batch of claims from the Department of
8 Labor. For us to receive a claim from the
9 Department of Labor, what has to happen is two
10 criteria are met: The claim has to have had the
11 employment for the energy employee verified by
12 DOL turning to Department of Energy and seeking
13 that verification that the individual actually
14 worked at the site or sites they claim. Second
15 criteria test is medical diagnosis. The claim
16 has to present a confirmed diagnosis, either a
17 death certificate or a clinical diagnosis of the
18 cancer. Then the claim is verified as eligible
19 and sent to us.

20 On October 19th the President made
21 announcement about your appointments to this
22 Advisory Board. So a lot has happened in a short
23 amount of time up to this point. Now a lot more
24 has happened.

25 The first batch of acknowledgment letters -

1 and I'll talk about the steps in our process in a
2 moment -- but this is significant and remarkable
3 in that we're trying to -- we're working with
4 batches of claims, and we're trying to turn
5 batches through steps in the process as
6 expeditiously as possible. So the first step is
7 get the claim from DOL, the second step is to
8 send a letter to the claimant letting them know
9 that we have their claim in our hands, and they
10 can contact us at this point to verify status of
11 the claim.

12 As I mentioned, the public comment period
13 for the dose reconstruction rule closed on
14 November 5th. We reopened it again during your
15 last meeting, and it is now open again for public
16 comments on the dose reconstruction rule. That
17 will close on March the 1st.

18 The first batch of requests for personal
19 monitoring information data that were sent to the
20 Department of Energy on November 27th. This is
21 on individual claims seeking dose information,
22 badge results and bioassay information from the
23 Department of Energy to start our initial
24 evaluation of the dose reconstruction process for
25 that claim.

1 The public comment period for guidelines on
2 determining probability of causation were again
3 closed on December -- and as I mentioned, they
4 reopened. We've reopened them to coincide with
5 your meeting.

6 On December 20th we conducted the first
7 claimant interview as an expedited interview.
8 Well, expedited the interview because the
9 claimant was wanting to share their work history
10 with us before they passed, and we thought it was
11 beneficial to get that and accommodate that
12 situation.

13 On December 27th of 2001 the first batch of
14 letters informing claimants that we had gone to
15 DOE seeking information regarding their claim
16 were sent out. Again, we reopened the public
17 comment period. That's throughout this.

18 You all met in January, on the 22nd and
19 23rd, and I know that was a hectic two days with
20 a lot of information provided. Again, the public
21 comment period closed on those rules, and we've
22 again reopened them.

23 Let me talk a little bit about the staff. I
24 mentioned 22 FTEs approved. Not all 22 are
25 filled. I'm blessed by having a very competent,

1 exemplary staff. You met Dave Sundin last
2 meeting. You know Jim Neton from last meeting;
3 he'll be here shortly. Martha DiMuzio, you
4 checked in last meeting, she was here. Nichole
5 Herbert was also here as my secretary. They're
6 not here today. They're back tending to business
7 in Cincinnati. Jim will be here shortly, as I
8 mentioned.

9 And our technical support team, you met Russ
10 Henshaw last time. David Allen, who will be here
11 shortly this morning to present to you later.
12 Grady Calhoun you met last time; he's back in the
13 office for this meeting. Tim Taulbee's here
14 today. He'll be presenting to you, another
15 health physicist on staff. We have a couple of
16 vacancies in guise of a statistician and an
17 office automation assistant for this team.

18 Then we have a records management team
19 comprised of these individuals. You met Trudy
20 Zimmerman last time, I believe. And we have
21 Paula McCreary, who's an office automation
22 assistant or a secretary to this team; computer
23 specialist Nancy Kuo. Chris Ellison's here
24 today, who's a health communications specialist,
25 and a very vital job she performs for us. She's

1 responsible for our web site, and if you haven't
2 -- if the public hasn't been there yet, I'd
3 encourage you to get on there. We have a lot of
4 good information there for you, and I think it's
5 only going to get better. And we have a number
6 of vacancies shown here as well.

7 We've augmented gaps where we need
8 assistance in technical support by bringing
9 contractors in, and I've listed those as well. I
10 just want to give you -- share this level of
11 information with you to give you a sense of how
12 few people are doing the great things that are
13 going on.

14 I'm going to talk about the steps in this
15 process now so that you get a sense of this, and
16 I'm also going to give you a sense of what we're
17 facing. What you don't see at these meetings,
18 what a lot of people don't see, is the face on
19 this program, the claimants. And my folks have
20 to deal with those folks every day, and it's
21 tough.

22 Right now we understand that there's more
23 than 12,000 non-Special Exposure Cohort cancer
24 claims staged in some point of verification of
25 eligibility for the claim, ready to come to us.

1 That number may decrease. It may increase,
2 depending upon whether verification is achieved
3 or not on an individual claim.

4 In step one, as I mentioned, the claims come
5 to us once they're verified. This kind of
6 portrays how we saw those claims coming to us
7 during these months, and gives you a sense of the
8 increase by months that we're seeing. These
9 numbers -- all the numbers I'm presenting to you
10 are as of last Friday.

11 Step number two involves sending a letter to
12 the claimant letting them know that we have their
13 claim in our hands, and we're beginning the
14 process of dose reconstruction. The letter tells
15 them that this point in the process they do not
16 have to give us information. We'll be seeking
17 them out to find information.

18 The first thing we're doing is we're
19 evaluating our own records for information
20 relevant to their claim, making an informed
21 decision about what we need in addition to that,
22 and then we're taking the next step to go to DOE
23 to get the dose information. And so that's shown
24 in step three, and this is where we're at as far
25 as sending information requests to Department of

1 Energy, only for badge-related data and bioassay
2 data.

3 In step four we also follow back up with the
4 claimant to let them know what we're doing, that
5 we've approached DOE for the personal dose
6 information that we think they should have and we
7 need to start the dose reconstruction with.

8 In step five, this represents the number of
9 claims that DOE has responded to us with
10 information, and these keep trickling in all the
11 time.

12 In step six, this is where we do the initial
13 review of that information provided to us by DOE,
14 in conjunction with whatever we had in our hands,
15 and make a decision do we have enough, given what
16 we've been provided and what we have from our own
17 holdings, or do we need to go back to the DOE
18 site and request specific information that'll
19 fill a gap or an information need in pursuing a
20 dose reconstruction to completion?

21 We've conducted, as I said, only one phone
22 interview, so you see the numbers are decreasing.
23 We're now getting to the apical point, top of the
24 pyramid, if you will, of where we're at with all
25 of this.

1 We've gone back to DOE at this point in time
2 with 21 additional requests for information, and
3 we're going to have to work with DOE to pursue
4 that additional information that we want.

5 How many dose reconstructions have we
6 completed to date? None. That's relying upon us
7 finalizing the rule, getting your assistance in
8 doing that.

9 So as we proceed through today's business, I
10 want you to keep in mind what we are asking of
11 you. We need your review and comment on the dose
12 reconstruction rule. I call your attention again
13 to the three questions at the start of that rule.
14 I've tried to help, through this presentation,
15 frame what I think we're doing with regard to
16 those questions, that we are being interactive
17 with claimants, we are seeking information from
18 DOE. The presentations you're going to get
19 shortly from Jim Neton and Tim Taulbee and Dave
20 Allen are going to take you in a little bit more
21 detail into dose reconstruction methodology.

22 We're advancing that to you because we need
23 to make sure that we're off in the right
24 direction. We also need to make sure that we
25 bring along everybody on this committee with the

1 same level of understanding. If there's one
2 member of the committee that feels that they
3 don't have a grasp of the direction that we're
4 going with this, we need to work together to make
5 sure we all bring everybody along together on
6 this.

7 This is important, I think, because not only
8 are there legal interests here in processing a
9 claim to final adjudication, but there's also
10 technical interest here to do it right. And so
11 when we're talking about accuracy of doing dose
12 reconstruction, we're talking about giving an
13 accurate answer in the dose reconstruction input
14 parameters that go into the IREP to make a
15 determination for that claimant.

16 We've also had a number of phone calls
17 coming into the office -- and this is something
18 else we're dealing with on a day-to-day basis.
19 We're going to have to deal -- look at how the
20 Department of Labor handles their customer
21 service, and we're examining models and methods
22 to react to the number of phone calls that we're
23 getting. We're trying to get our web site page
24 up where a claimant can tap into that and find
25 out the status of their own claim, and we're

1 striving to get that in place.

2 We anticipate a number of claimants might
3 want to visit our offices. In Cincinnati we're
4 at the crossroads of three interstates, and we're
5 in the back yard of three sites, four sites.
6 We're not that far from Oak Ridge. We know
7 people are going to be driving by and thinking,
8 oh, I'll just stop in there and see my claim.
9 I'm concerned about this because of how we
10 present ourselves, but also because of security.
11 There's money vested interests here. People want
12 to know when they're going to get it and how soon
13 they're going to get it. And we're dealing with
14 some people who are deserving, and they're also
15 as well frustrated in trying to understand this
16 process. So we're going to accommodate those
17 visits, and we're going to do our best to provide
18 good customer service to these folks.

19 We provided a copy of the amendments to the
20 Act in your briefing booklet. These are fixes
21 that were put together and attached as amendments
22 in the Defense Authorization Act passed in
23 December. One of those things that came to us
24 from these amendments is this need to do a
25 residual contamination study of the atomic

1 weapons employers, with these two purposes in
2 mind. So this is not something the Board is
3 engaged in or is asked to review on. We want you
4 to know we are doing it, though, and we think it
5 will inform our efforts on dose reconstruction as
6 we proceed with AWE claims.

7 We are bound to do our level best to try to
8 meet the intent of Congress here, and provide
9 reports back to them on this time frame as
10 they've asked for. We have contractors in place
11 who are doing this work right now.

12 So that's for your information, to give you
13 a little broader context of what's going on with
14 the program. Hopefully you'll see some
15 information here that might aid you in your
16 deliberation about answering the questions in the
17 rule. And if there are any questions, I'll
18 respond.

19 **DR. ZIEMER:** Larry, let me begin the
20 questions, and we'll open it up for others, but
21 first I'd like to ask about the staffing levels.
22 Are the staffing levels that you showed us --
23 once you fill those vacancies, are those seen as
24 being adequate to handle this program once it's
25 going full-fledged, or do you anticipate further

1 staffing increases?

2 **MR. ELLIOTT:** This was the initial plan --

3 **DR. ZIEMER:** But it must have been based on
4 an anticipated number of claims. Based on what
5 you're seeing, are we on track?

6 **MR. ELLIOTT:** It was based on 8,000 claims
7 in the first year. The plan was to augment
8 technical support and expertise as necessary
9 through contracting mechanisms. We have a dose
10 reconstruction request for proposals on the
11 street right now, which the proposals are due
12 next -- the 20th, next week. That contract will
13 support the bulk of the work on dose
14 reconstruction, with this staff providing the
15 oversight of that effort. We're going to have to
16 wait and see as to whether or not we need
17 different skills and different positions to be
18 brought into the staff to handle what maybe we
19 didn't anticipate. But we had -- you know,
20 depending on how this goes and what our
21 experience and understanding base becomes, we
22 could go back and ask for additional support.

23 **DR. ZIEMER:** Roy DeHart, and then Jim.

24 **DR. DeHART:** Roy DeHart.

25 Two questions, Larry. The Special Exposure

1 Cohort is going a different track, at least now.

2 **MR. ELLIOTT:** The Special Exposure Cohort
3 guidelines are being -- have been prepared as
4 policy guidelines. They are in the Office of the
5 Secretary for review and concurrence right now.
6 What the Office of the Secretary decides to do
7 with them is their discretion. They may come
8 back at us to finalize as policy guidelines, or
9 they may say we think it better to go with a
10 proposed rule here. So we're waiting to see what
11 the Secretary's desire is.

12 **DR. DeHART:** Thank you. The second
13 question, you're telling me that the initial
14 letters are going in to the Department of Labor,
15 reviewed for the two criteria, then coming to
16 you, and then going to DOL. Why can't that be
17 short-cut?

18 **MR. ELLIOTT:** I may have confused you. The
19 claim is submitted to the Department of Labor
20 through the use of the forms that they have
21 provided to the claimants. The eligibility is
22 verified by the employment and then the medical
23 diagnosis. Then if that happens, the claim is
24 verified eligible, DOL sends the claim to us for
25 dose reconstruction. We're going to DOE then to

1 obtain information on dose, badge data and
2 bioassay data that can be used. We're not going
3 back to Labor, so I may have confused you with
4 that.

5 **DR. DeHART:** No, I'm sorry, I was confused
6 on the question. What I don't understand, what
7 role are you playing in the interim between the
8 two, between the Department of Labor to you and
9 then sending to DOE? Could Labor not simply go
10 to DOE and ask them to start looking at exposure?

11 **MR. ELLIOTT:** We think it's important that
12 we make that step because, first of all, we've
13 proposed that we have a number of research data
14 in our hands from prior studies of some of the
15 sites, in order to diminish the impact upon DOE,
16 and they're getting considerably impacted by
17 requests for information, not only from the
18 Federal side of the program but from the state
19 comp side of the program as well.

20 It made more sense to us to get the claim,
21 understand what the cancer was, where they
22 worked, and then make the approach to the sites
23 with the specific requests for information that
24 we need. We didn't feel it appropriate to rely
25 on Labor to do that in advance of sending it to

1 us.

2 **DR. ZIEMER:** Jim.

3 **DR. MELIUS:** Yeah, Jim Melius.

4 You can defer this question if you're going
5 to present it later or if you think it's more
6 appropriate, but I have some questions regarding
7 how you make a determination that the records
8 received from DOE are incomplete. Now I believe,
9 based on the process so far, you're doing that
10 based on what you receive back from DOE, because
11 you haven't really interviewed more than a --
12 well, I guess you've interviewed just the one
13 worker. Are you going to be talking about that
14 later, because I think that's sort of a critical
15 question.

16 **MR. ELLIOTT:** I can answer that now, and
17 then hopefully that will be embellished more with
18 the presentations you're going to get.

19 We see this as a progressive set of steps to
20 accrete information necessary to develop the case
21 file. And as I said, first we check our in-house
22 holdings, then we approach DOE for just a
23 straightforward, personal dosimetry information -
24 - badge data and bioassay data. And this is
25 designed to accommodate our need for efficiency

1 in turning the claims around.

2 And Jim will talk, and Dave and Tim will
3 talk about this a little bit as well in their
4 presentations, how do we achieve that efficiency
5 if a claim is -- apparently the dose is high
6 enough, and we add what missed dose that we can
7 readily add and move that through the process
8 toward final adjudication and getting a decision,
9 that makes sense to us.

10 Likewise, if the dose that we get back from
11 DOE and the relative information needed to
12 complete a dose reconstruction, and the worst-
13 case scenario applied there would never achieve
14 an award, we need to know that and we need to
15 tell the claimant that as soon as possible so
16 that we avoid frustration on their part.

17 It's the middle group that we're going to
18 focus our attention on, on doing comprehensive
19 dose reconstructions on. We bring the interview
20 of the claimant into that process after we've got
21 the first batch of information back from the
22 Department of Energy. So once we've got the dose
23 on an individual, we may go back to DOE
24 requesting more information, but we're going to
25 take the next step with the claimant interview

1 and start pulling that information together. We
2 may go back to DOE more than once on an
3 individual claim.

4 How do we verify what we've got from DOE?
5 Is that part of your question, how do we test the
6 veracity of that information? If you've gone
7 through the implementation guides you'll see some
8 of the underlying assumptions there, some of the
9 types of information beyond personal dose
10 monitoring information that we feel we need to
11 seek to better our understanding and be more
12 complete in our dose reconstruction process.
13 We're working on an MOU with Energy to gain
14 access to this information. We feel that's -- we
15 interpret the Act to -- that is their
16 responsibility to provide us access and provide
17 the information necessary to do complete dose
18 reconstructions. So this is being worked out.
19 It's not fully there yet.

20 **DR. MELIUS:** Do you have a time table for
21 that, because I think it's going to -- I'm not
22 sure where the process is, but I think it's going
23 to be hard to sort of assure that you've received
24 everything unless you've worked out some sort of
25 an arrangement with DOE that I won't say

1 guarantees that, but ensures a complete effort on
2 their part.

3 **MR. ELLIOTT:** I don't have a time table to
4 present to you. There are a number of different
5 efforts, that the culmination of those efforts I
6 hope are going to happen all about the same time,
7 in April. I'm not prepared today to talk about
8 how that time line looks for any given individual
9 effort, and when and where we might find
10 ourselves on-track or off-track.

11 **DR. ZIEMER:** Gen Roessler.

12 **DR. ROESSLER:** My question's about the dose
13 reconstruction contractor. You've already
14 answered part of that, but it seems to me this is
15 -- it's very important, as I read through the
16 documents, to make sure that whoever's doing that
17 work, almost on an individual basis, remains
18 objective. Because there's some details that
19 just really that we have to, I think, as a Board
20 assure that that's happening. Who looks at the
21 proposals and selects the contractor?

22 **MR. ELLIOTT:** This is done according to
23 government procurement standards. There is a
24 technical review team that has been established -
25 - my staff represents the bulk of that team -- to

1 review all the proposals. Then there's a
2 business review that the procurement office
3 conducts. There's weighting factors associated
4 with the proposals. There's an evaluation guide
5 that is prepared to evaluate the proposals
6 against, and it's on a point basis. And then we
7 have the -- we have a -- in that process there's
8 a deliberation of who to award to, and
9 negotiations are started toward the award. The
10 award will be made, the decision for an award
11 will be made jointly by the program and the
12 procurement office.

13 **DR. ROESSLER:** And then I think you answered
14 this question. Once the contractor is selected,
15 then your staff provides the oversight?

16 **MR. ELLIOTT:** That's right.

17 **DR. ROESSLER:** And is that pretty much an
18 ongoing --

19 **MR. ELLIOTT:** Yes.

20 **DR. ROESSLER:** -- all the time sort of -- I
21 don't imagine it would be looking at individual
22 decisions?

23 **MR. ELLIOTT:** We will be. We will be doing
24 it --

25 **DR. ROESSLER:** You'll be looking at--

1 **MR. ELLIOTT:** We'll be doing dose
2 reconstructions blind against the contractor. We
3 will also be doing -- in our quality control
4 program with the contractor we'll be evaluating a
5 sample of dose reconstructions. And you play a
6 role in your responsibility to review dose
7 reconstructions. So that's something we're going
8 to have to talk about, how do we frame that work,
9 how does that happen.

10 **DR. ROESSLER:** I don't think you have enough
11 people.

12 **MR. ELLIOTT:** Well, I appreciate those
13 comments. But this is for information, and just
14 to give you an insight and a context to work
15 from. And believe me, I understand where I'm at,
16 and we're trying to do the best we can, and I
17 have great people doing great things.

18 **DR. ZIEMER:** And I might insert, Gen, and
19 you may recall at our last meeting we talked at
20 least briefly about the fact that this Board will
21 probably need to establish a working group of
22 some sort to look and sample the dose
23 reconstructions as, in a sense, part of a quality
24 control to satisfy ourselves that they are being
25 appropriately done. So I think it's likely that

1 we ourselves will have some sort of ongoing role
2 in that process.

3 Yes, Wanda, I believe, has a question.

4 **MS. MUNN:** Yes. Larry, this may be
5 premature, given the state of where we are. But
6 if I understood your presentation, about one-
7 fifth of the cases you have received from DOE
8 have had to involve some sort of additional
9 interaction with them?

10 **MR. ELLIOTT:** We've gone back for additional
11 information, yes.

12 **MS. MUNN:** And I guess what I'm wondering is
13 whether you consider this just start-up issues,
14 getting the program off and rolling, or do you
15 anticipate that over the long haul that might
16 signify about the number of double feedback
17 interactions that --

18 **MR. ELLIOTT:** I think it's too early, it's
19 too premature to make any type of interpretation
20 of these statistics I've shown you today. We are
21 getting underway. It's an evolving process.

22 **MS. MUNN:** I understand.

23 **MR. ELLIOTT:** We are working with Energy to
24 assist them in enabling their sites, and the
25 people who respond to our requests understand

1 what it is we want. Some of these that you see
2 are AWEs, and while we got all the information
3 right now from DOE that DOE has, we still feel
4 the need to go after some additional information
5 that the AWE might have and may not have.

6 **MS. MUNN:** Yeah.

7 **MR. ELLIOTT:** Some of these that you see
8 here that went back to DOE were simply where they
9 didn't -- the point of contact at a given site
10 didn't understand what it was we were seeking,
11 and sent us cumulative dose, as an example.

12 So this is premature to use these numbers to
13 try to do trend analysis, but we are collecting
14 these kinds of statistics. We're monitoring. We
15 know how many claims are at DOL for a given site.
16 We get a monthly update on those, so we kind of
17 target what the work load looks like for a given
18 site when we talk about doing profiles of a site.
19 So there are these kinds of informative
20 statistics that are going to be forthcoming, but
21 we're not here yet to be able to interpret all of
22 those.

23 **DR. ZIEMER:** Bob Presley, I think, has a
24 question, and then Jim.

25 **MR. PRESLEY:** Bob Presley.

1 Larry, are they -- is there an effort
2 underway to broaden the Special Cohort facilities
3 in any way?

4 **MR. ELLIOTT:** Well, that's the Special
5 Exposure Cohort guidelines, petitioning process
6 guidelines that I mentioned earlier, that we have
7 developed and are in the Department in review.

8 **DR. MELIUS:** To follow up on Genevieve's
9 question from earlier, and one part of it you
10 answered, the other you didn't. How do you deal
11 with potential or perceived conflicts of interest
12 with your dose reconstruction contractor? Is
13 there a process similar to, I guess, what the
14 Board's gone through in terms of handling those
15 situations, or how do you do that or plan to do
16 that?

17 **MR. ELLIOTT:** The RFP calls for a plan in
18 the proposal from -- to speak to this point, how
19 will conflicts of interest be handled by the
20 contractor, should they be awarded. There are
21 several other deliverables besides just -- within
22 the proposal besides that plan, a quality control
23 plan. This is a conflict of interest plan. How
24 will they address somebody who works at a given
25 site, or somebody who is on their staff who was

1 involved in radiation protection program at a
2 site or maintaining records at a site, and how
3 will they handle avoiding perceived conflicts of
4 interest of individuals dealing with those?

5 Once we get the proposals in we evaluate
6 those plans, and we will negotiate with the
7 individual awardee on what we think the proper
8 plan should be.

9 **DR. MELIUS:** Can I follow up on that? Will
10 there then be a final plan that would be a public
11 document or part of -- available as part of the
12 process so a claimant would understand that if --

13 **MR. ELLIOTT:** Yes.

14 **DR. MELIUS:** Okay.

15 **MR. ELLIOTT:** Yes. Yes.

16 **DR. ZIEMER:** Henry Anderson.

17 **DR. ANDERSON:** Just quickly, you're tracking
18 individually the process and the recall issue,
19 and you have flags in there on time lines.
20 Because I could see you sending a batch of
21 requests into a specific facility, and very
22 quickly you might get back some, but then some
23 don't come back from that batch. And then what
24 flags do you have that maybe they're having
25 difficulty or there's some problem? Because I

1 think you'll get a kind of a standard curve of
2 response times, and the tail that's out there --

3 **MR. ELLIOTT:** Right.

4 **DR. ANDERSON:** -- you want to be sure that
5 you're aware when a problem has developed,
6 because you may then go into your alternative
7 exposure -

8 **MR. ELLIOTT:** Right. Absolutely, good
9 question. And even those we're dealing with
10 these on batch basis, once we send off to DOE, we
11 watch and monitor on an individual claimant
12 basis. We're asking DOE to turn a response
13 around to us in 60 days whether they can find the
14 information or not. In 60 days' time on each
15 individual claim, we need to hear back from DOE
16 on where they're at. Now if they find the
17 information we've requested in advance of 60
18 days, certainly we've encouraged them to send us
19 that information on an individual basis, not wait
20 until the batch is complete.

21 **DR. ANDERSON:** Okay.

22 **MR. ELLIOTT:** So we're monitoring each
23 claim, what its status is, has it passed the 60-
24 day mark. Then we go back to DOE and we remind
25 them if we haven't seen any action on it.

1 **DR. ZIEMER:** Larry, could I follow up on --
2 and this may be a question that I should be
3 addressing to someone other than you -- but do we
4 have any knowledge or sense of the extent to
5 which DOE has dedicated resources and personnel
6 to supporting this effort versus just handling
7 claims as they would anyone else in their system
8 asking for their exposure reports?

9 **MR. ELLIOTT:** Well, Josh Silverman's here
10 from DOE, Office of Worker Advocacy. They have
11 an office established to handle their
12 responsibilities under this program, which
13 include more than just responding to requests
14 from us. They have the physician panels they
15 have to run for the state comp program side of
16 it. I can't speak to number of staff --

17 **DR. ZIEMER:** I wonder, Josh, if you'd be
18 willing to comment on that briefly? Josh, are
19 you here?

20 **MR. SILVERMAN:** Yeah.

21 **DR. ZIEMER:** You don't have to if you don't
22 wish to, but if you're able to -- just for our
23 benefit, so we have a feel for what's happening
24 at DOE.

25 **MR. SILVERMAN:** Very briefly, we've been

1 working very closely with NIOSH and with the
2 Labor Department, and we have provided some
3 funding for major field sites for their records
4 activities. So we were concerned that this not
5 look like another unfunded mandate coming down
6 from headquarters. We are in regular
7 communication with our field sites and continuing
8 to help smooth this process. It's a new type of
9 request for many of them, and so there are many
10 issues to be resolved. But we're working on
11 that, I think closely with NIOSH and with Labor,
12 for the type of information that they need from
13 our sites.

14 **DR. ZIEMER:** Thank you.

15 Other questions? Henry?

16 **DR. ANDERSON:** Of the -- I noticed your
17 phone calls is going up. We're early in February
18 and you're already high. What types of calls --
19 are those people wanting to call to find out
20 what's the status of my claim?

21 And then the next question would be are you
22 thinking of having, and maybe already do, an
23 online tracking system that would then reduce the
24 calls coming in, because people would be able to
25 look and see --

1 **MR. ELLIOTT:** Yes.

2 **DR. ANDERSON:** -- where their claim is in
3 the process.

4 **MR. ELLIOTT:** Yes.

5 **DR. ANDERSON:** Because the calls will start
6 to eat up your processing time, and it gets to be
7 a real vicious circle.

8 **MR. ELLIOTT:** This is -- you're absolutely
9 right. This is something I mentioned earlier,
10 that we're -- I'm very sensitive to the claimant
11 interests here, the number of calls that we're
12 getting in, the fact that we may have walk-in
13 visitors.

14 The calls to date have been varied, from
15 exactly what you mentioned -- what's the status
16 of my claim, where's it at, what are you doing
17 with it, when can I expect a decision, why aren't
18 you moving faster? Educating people on this
19 program and the process that their claim must go
20 through is a big component of what Chris does and
21 the other folks in my office who answer the
22 phones.

23 Yes, we do plan -- I mentioned this briefly
24 in my talk -- we have one page on our web site
25 where you can get much of this information right

1 now about how many claims does NIOSH have in our
2 hands, where they're at in the process. We have
3 had a plan from the very start to allow an
4 individual claimant to enter through the web site
5 and determine their status of their claim. We've
6 had some difficulties in getting that approved
7 and set up on our web site because of Privacy
8 Act-related concerns. We've had to deal with
9 those, and we're moving forward with trying to
10 get that in place, because it will help us reduce
11 the number of contacts by telephone. It's not
12 going to do away with all of them, though. We
13 know that, and we want to be responsive to these
14 people in many ways.

15 That's a big side of the work that we have,
16 dealing with the claimants. And we've been to
17 Department of Labor's Jacksonville District
18 Office trying to examine their operation and
19 their organization and their flow of work. They
20 have a whole group that deals with customer
21 service who answers the phone, and how do they do
22 that, and how do -- you know, we don't want to
23 leave folks hanging on the line waiting for
24 somebody to talk to them. Some of these folks
25 are elderly and can't hear very well. We need to

1 accommodate that. We're looking into all of
2 that, and we're -- I don't want to fail in that
3 regard. We're going to do our level best to
4 achieve success there.

5 **DR. ZIEMER:** Okay, Jim.

6 **DR. MELIUS:** Just one comment. I would just
7 like to ask the Chair if we can come back to some
8 of these issues, particularly regarding the
9 oversight and quality control and so forth over
10 this process. I think after we've gone through
11 the presentations, and maybe either this
12 afternoon or sometime tomorrow, we spend some
13 time on this issue, because I don't think we can
14 sort of finish our comments on dose
15 reconstruction without at least thinking through
16 and starting some discussion on those sort of --
17 our role in this process.

18 **DR. ZIEMER:** We most certainly will do that,
19 Jim. And after we hear the discussions -- for
20 example, the presentation by Jim Neton and others
21 -- I think some of these will flow naturally out
22 of those discussions, in any event. So we
23 certainly will keep that in mind.

24 Larry, thank you very much. This has been
25 very helpful, and I'm sure many of these issues

1 we'll be digging into in great detail as we
2 proceed.

3 **MR. ELLIOTT:** I appreciate that. I'd just
4 add this, that we're trying to bring you along
5 with your understanding, and I'm trying to get
6 that delivered in as non-technical laymen's terms
7 as possible so that we achieve some level of
8 transparency here and understanding. And again,
9 a lot of what I just presented is really -- I
10 want it to be information for your deliberations
11 and provide a better context.

12 And I hope we can get to that level of talk
13 about oversight, but I really think we need to
14 focus on providing comments on the general rule,
15 and then we can work together --

16 **DR. ZIEMER:** Right.

17 **MR. ELLIOTT:** -- on these other issues in
18 the implementation guides and other things like
19 that as we proceed.

20 **DR. ZIEMER:** It certainly has provided for
21 us a good framework to see what sort of the big
22 picture is as your office undertakes this
23 extensive task.

24 I want to focus for a moment on the agenda
25 and point out that after our break, which will be

1 coming up shortly, we have on the agenda recap of
2 the Advisory Board's comments. That recap will
3 not take the full hour, so it's my hope that
4 we'll be able to start on the presentation of the
5 Part 42 reconstruction rule a little bit earlier
6 than shown on the agenda, because that's where we
7 need to spend our time in any event as we dig
8 into Jim Neton's presentation.

9 Before we take our break, I notice that
10 there are many more visitors and observers and
11 members of the public that have joined us since
12 our opening introductions. So several comments I
13 would make: I would ask if those who've joined
14 us, if you've not already done so please sign in.
15 There's a sign-in book out in the foyer. If you
16 wish to make public comments at that point in our
17 agenda, which is later in the afternoon, please
18 sign up in the public comment book so that we
19 know how to apportion the comment time and
20 period. Again, I'd point out that there are
21 copies of handouts on the table in the far corner
22 over here in the room, and please avail
23 yourselves of those handouts.

24 And then finally, if you were not here
25 during the introductions, we now would like to

1 ask you, observers and members of the public, to
2 identify yourselves, your name, and if you
3 represent a particular group, what that group is
4 so that we have this for the public record also.

5 **MR. HARPER:** My name is Jeff Harper. I'm an
6 attorney with Harper and Associates and a
7 contractor with DOE.

8 **MR. McADAMS:** I'm Tim McAdams. I'm a lawyer
9 with Westat and a contractor with NIOSH.

10 **MR. SILVERMAN:** I'm Josh Silverman with the
11 Department of Energy.

12 **MS. KELLEY:** Alice Kelley with the
13 Department of Health and Human Services.

14 **MR. THOMAS:** I'm Cristal Thomas. I'm with
15 the Office of Management and Budget, and I'm with
16 the CDC (inaudible).

17 **MS. LEVINE:** Sonya Levine from the
18 Department of Labor, Office of the Solicitor.

19 **MR. MATHAMEL:** Marty Mathamel, I'm an
20 independent environment safety and health
21 consultant.

22 **MR. GRIFFON:** Mark Griffon, CPS. I'm a
23 contractor with PACE International, Inc.

24 **MR. NETON:** I'm Jim Neton. I'm with NIOSH
25 OCAS.

1 **MR. ALLEN:** I'm Dave Allen. I'm with NIOSH
2 OCAS.

3 **DR. ZIEMER:** I want to ask the court
4 recorder, are there any of those names that you
5 were unable to get --

6 **MS. NEWSOM:** Yes, there were.

7 **DR. ZIEMER:** All of them, huh?

8 **MS. NEWSOM:** Several of them.

9 **DR. ZIEMER:** Do you need us -- or you might
10 be able to get them from the sign-up sheet.

11 **MS. NEWSOM:** Yes, I'll get copies of the
12 sign-up sheet.

13 **DR. ZIEMER:** Okay, we'll figure it out.

14 **MS. NEWSOM:** Thank you.

15 **DR. ZIEMER:** Thank you.

16 We will now take our break, and I'd like to
17 reconvene, if we can, at about quarter of -- let
18 me see, how much -- yeah, that's about right.
19 Twenty minutes should be plenty, so at 9:45 we
20 will reconvene. Thank you.

21 (Whereupon, a recess was taken from
22 9:28 to 9:55 a.m.)

23 - - -

24 **DR. ZIEMER:** I pointed out to the NIOSH
25 communications person who's here today that the

1 best tool for communication, I've found out, is
2 this gavel. It really works well. We'll call
3 the meeting back to order.

4 The first topic that we have before us now
5 is the recommendations of the Advisory Board
6 relating to 42 CFR 81. For the benefit of
7 members of the public who might not have been
8 here last time or who are involved here for the
9 first time as observers, at our last meeting the
10 Advisory Board did some working group activities
11 on the second day to develop some preliminary
12 drafts for comments to be made to the Secretary
13 of Health and Human Services relating to the
14 proposed rule-making, 42 CFR 81.

15 After our meeting, the wording on -- the
16 proposed wording on our advice was further
17 refined by the working group and then distributed
18 by e-mail to the members of the Board.

19 The final document was acted upon and voted
20 upon in a conference telephone call that was held
21 -- when was that held? It's -- the time flies so
22 fast when you're having fun, I -- yes, it was
23 recently, a week ago or so. That was an open
24 telephone call, open to the public.

25 The final document is available -- is it on

1 the table, let me ask? It's on the table --

2 **MR. ELLIOTT:** Yes, it's on the table.

3 **DR. ZIEMER:** -- and it appears on the
4 Advisory Board's new letterhead. It looks like
5 this (indicating). It has a logo and the name
6 Advisory Board on the top.

7 The document consists of two parts. One is
8 the letter over my signature to Secretary
9 Thompson. That letter explains what we did at
10 our first meeting. That letter also includes, in
11 the second to last paragraph, a -- what we might
12 think of as a recommendation, but really took the
13 form of a suggestion relating to the composition
14 in membership of the Board. Since the Board is
15 not specifically asked for advice on its own
16 composition, we simply put this in the form of a
17 comment, and you will see that there. It has to
18 do with the Board makeup in terms of
19 representation from the sector which we
20 identified as the nuclear production worker
21 sector.

22 And then the document includes, as enclosure
23 one, specific comments on 42 CFR Part 81. The
24 comments are grouped into three parts. Those
25 three comments are broad comments relating to the

1 questions asked in the preamble of 42 CFR 81, the
2 draft rule-making, and those comments are there
3 for your information.

4 These have been sent to Secretary Thompson.
5 They were sent on February 6th. I've not yet
6 received a letter back from Secretary Thompson
7 telling me that this is the best advice he's ever
8 received, but in any event, the information has
9 gone forward.

10 I don't know if any of the committee or
11 Board members wish to make any further comments
12 on this document. Let me first ask if there are
13 any questions or comments on the document as it
14 went forward.

15 (No response)

16 **DR. ZIEMER:** Then I don't think -- oh, yes,
17 Henry Anderson has one question.

18 **DR. ANDERSON:** Just for the public that was
19 not -- I think it's important for them to know
20 that there was unanimous support for the letter
21 and the issues raised in it, so it was -

22 **DR. ZIEMER:** Okay, thank you for that
23 comment. Yes, all of the Board members were
24 present on the conference call, and the final
25 vote was a unanimous vote to support the content

1 of the recommendations.

2 I might add that there was some discussion
3 in the process as the Board developed various
4 drafts of the document. There was discussion
5 about how and at what point the public should be
6 involved in the process. There is indeed some
7 debate on how this should be handled in the
8 public forum. It's not clear to me that we know
9 -- it's certainly clear that our process is to be
10 open.

11 The issue of at what point what are
12 sometimes called pre-decisional drafts are made
13 public is a question. There certainly is the
14 possibility, and maybe even the probability, that
15 the FACA rules, as applied to boards such as
16 this, may not be quite the same as the rules that
17 apply to Federal agencies as far as pre-
18 decisional drafts.

19 In any event, it certainly is our intent
20 that the process be open to the extent that we're
21 able. Technology may have moved ahead more
22 rapidly than even FACA anticipated, so that as we
23 get into e-mailing each other with minor and
24 major changes on documents, keeping the public
25 informed becomes problematical.

1 On this particular document it appeared that
2 at least one group had access to the wording and
3 others in the public may not have had. And in
4 fairness, I think in the future we need to think
5 of ways that, if the process is to be open, how
6 we can do that; and make documents, if they are
7 to be open, available to the public early on. We
8 were very much pressed for time, and so that some
9 members of the public did not have access to the
10 proposed comments until the time of the phone
11 call when they were read into the record.

12 And it certainly could be argued that in
13 fairness that does not give the public much time
14 to review and react, so we need to be giving some
15 thought. I think the Board needs to think about
16 it, and perhaps with input from Board members and
17 the NIOSH staff we can think about the extent to
18 which we might want to even have some comments in
19 our operational rules that we adopted last time
20 as to how to handle these sorts of things in the
21 future. And we can certainly have some comments
22 on that now. I'm not suggesting that we try to
23 solve the problem now, but certainly feedback's
24 important.

25 Jim.

1 **DR. MELIUS:** Well, I am just -- maybe I'm
2 jumping the gun, but if we're going to be putting
3 together comments on dose reconstruction, I think
4 we're going to have to meet -- confront this
5 issue very shortly.

6 And my suggestion would be -- I think it's
7 simple, and Larry, you can tell me if it's
8 feasible -- is just post all the drafts and
9 comments on the web site, and as they come in.
10 And we copy Larry or whoever you want us to copy
11 on each comment, and that's posted so it's
12 public, and drafts are public. And that can be
13 done, I think, in a timely fashion, and I think
14 that -- we'd announce it at the meeting, so at
15 least people attending, the public would know
16 about what might be coming up there, and then it
17 would be available as it went along. Again, most
18 of the comments are just sort of grammatical or
19 wordsmithing or whatever, which is fine, but then
20 it's -- everyone sees it, and then there's no
21 question of what's being missed or whatever.

22 **DR. ZIEMER:** Yeah. And Larry, you might
23 want to comment on that.

24 But let me also insert, and then also I
25 would suggest that any public comments on the

1 comments be also public. On our particular
2 draft, I received personally comments from a
3 public group, and I think the other Board members
4 were copied on this. But it's not clear to me
5 that those comments themselves were public at
6 that point.

7 So we did have -- those were, in a sense,
8 read into the record. We didn't verbally read
9 them on the telephone conference, but we asked
10 that they be included in the public record of the
11 telephone conference. Because I think in
12 fairness we also want the public responses to be
13 public, and not just to the Board members. So
14 it's sort of fair is fair; let's get everything
15 out in the open.

16 Larry, please.

17 **MR. ELLIOTT:** Yes, certainly we can put them
18 on the web site, and that would be our intention
19 to do so, and the public comments as well, as
20 they are forthcoming.

21 **DR. ZIEMER:** Right. In that case, any
22 comments -- we would ask that comments that come
23 in not be directed to the Board, but just write
24 to the NIOSH staff so they can be made publicly
25 available, or both, but --

1 **MR. ELLIOTT:** What we have to achieve here
2 is the deliberation of the Board needs to be done
3 in a public forum.

4 **DR. ZIEMER:** Yes.

5 **MR. ELLIOTT:** And so --

6 **DR. ZIEMER:** And so we certainly want to
7 make every effort to do that, and if this is a
8 way we can handle it readily, certainly I don't
9 think we even need to take any action other than
10 to realize that that's the process.

11 Other comments? Roy, you were wiggling here
12 a little bit. Does that mean --

13 **DR. DeHART:** No, I was just thinking about
14 what we did last time and what the process would
15 be this time. Would then we address our comments
16 to the other Board members as we have done, and
17 include then the address for the web site? Do we
18 need to do that, or Larry, you would pick up on
19 the address -

20 **DR. ZIEMER:** No, to the staff, I think, and
21 then they would put it on the web site.

22 **MR. ELLIOTT:** I would ask that you include
23 me and Cori on your e-mail transfers, and we will
24 make it happen on the web site. The only
25 limitation with the use of the web site is that

1 not all of the public has access to the web. And
2 so we'll have to make accommodation for telephone
3 requests for that kind of information as well,
4 and we'll have to make that announcement.

5 We'll see how we get through here today and
6 tomorrow. Do we need another teleconference, and
7 if so, then we should talk about how we conduct
8 the business of the Board after we leave here and
9 before we have that teleconference to finalize
10 your comments.

11 **DR. ZIEMER:** Thank you. Other comments at
12 this point on that issue?

13 (No response)

14 **DR. ZIEMER:** Thank you very much.

15 We're going to proceed, then, with the
16 presentation by Jim Neton, which gives us more
17 detail on the dose reconstruction area. And then
18 there will later be further details on both
19 external and internal dose reconstruction by the
20 other staff people. But we'll start with Jim
21 Neton, and Jim will give us sort of an overview
22 on the dose reconstruction rule.

23 Jim.

24 **DR. NETON:** Thank you, Dr. Ziemer. It's a
25 pleasure to be here again. I think this is my

1 third time now addressing the Board, so if you're
2 not tired of me by now, I guess you'll never be.

3 I'd like to talk today about the
4 implementation of the dose reconstruction rule
5 and provide a general overview to set the
6 framework, really, for the two presentations that
7 are to follow me. That would be Tim Taulbee,
8 who's going to address the external dosimetry
9 implementation guide, and Dave Allen, who's going
10 to address the internal dosimetry implementation
11 guide.

12 What I'd like to do is do a little bit of an
13 overview of the actual steps in the process as
14 the rule is written, and where we are in
15 fulfilling some of those steps, what we've done
16 so far; talk a little bit about the documentation
17 that we have in place to try to have a pedigree
18 for this program so that we can really document
19 well what we've done.

20 And then I don't want to belabor the point,
21 but I'd like to go over a little bit about the
22 efficiency process that we've adopted, because I
23 think that really is the heart of making this
24 program work. And I talked a little bit about it
25 last time, but I think I've got some -- a few

1 more concrete examples and some probability of
2 causation results that we can discuss.

3 And then I'd like to finish up briefly with
4 a couple of issues that are somewhat unique to
5 the program, and that would be radon. That's not
6 really a dose reconstruction issue; it's an
7 exposure assessment or an exposure
8 reconstruction. And then to talk a little bit in
9 a little more detail about the atomic weapons
10 employers.

11 There are five major steps in the rule if we
12 outline how a dose reconstruction takes place.
13 And the first of these steps is sort of obvious,
14 is to collect the existing information. And
15 there's two sources of information available to
16 us out there.

17 Well, there's the Department of Energy
18 information that's collected at the DOE
19 facilities themselves, and that is -- that
20 information is actually owned by the Department
21 of Energy, and we're interfacing of course with
22 them, and you've heard Josh Silverman talk this
23 morning about the Office of Worker Advocacy.

24 There's also the piece of the information
25 that's from the atomic weapons employers -- that

1 is, those contractor facilities that were not DOE
2 prime contractors, the facilities were not owned
3 by the Department of Energy; and thus, those
4 exposure records are not necessarily property of
5 the Department of Energy or NIOSH or anyone. And
6 it's a slightly different issue that I'll talk
7 about a little later in collecting that
8 information.

9 As far as collecting information, though, I
10 think -- I missed Larry's presentation this
11 morning, but I'm sure he talked about what we've
12 done so far in going out to collect personnel
13 monitoring information workers -- I mean, from
14 the Department of Energy related to workers at
15 DOE facilities. We've got a number of those
16 requests out.

17 We've taken a staged approach to this, and
18 that is personnel monitoring information only at
19 the present time. We sense that -- it's sort of
20 an efficiency process as well. If the personnel
21 monitoring information alone can allow us to
22 perform a dose reconstruction, then that's well
23 and good, and we're not going to spend time going
24 after records that may be very difficult to
25 obtain, such as the work place monitoring

1 information, or even things such as like pocket
2 ionization chambers that workers have worn. Some
3 of the DOE facilities themselves have indicated
4 that may take a much longer period of time to
5 collect that information.

6 So we're working it through on a staged
7 process. And I will say at a number of the sites
8 we've had some very good cooperation with the
9 contractors trying to figure out exactly what we
10 need. We're trying to get the dosimetry staff at
11 the sites more involved. It turns out if you ask
12 a records organization to provide records they'll
13 give you exactly what you ask for, but if you ask
14 a dosimetry person to help and assist in the
15 process, they tend to know. I've talked to
16 several people, and a light bulb goes off, and,
17 oh, if I was doing a dose reconstruction, what
18 would I use? Well, they can coordinate that
19 effort with the site personnel and hopefully get
20 a better product.

21 The second stage is the interview with the
22 claimant, and we are committed in the rule to
23 interview every claimant individually to help --
24 to add to their dose reconstruction effort, to
25 fill in missing information, to do consistency

1 checking on the information we receive from the
2 Department of Energy, that sort of thing.

3 That is going to be performed through a
4 computer-assisted telephone interview concept --
5 that is, there's a computer program, there's a
6 script that we have prepared already that has
7 been approved by OMB. There are three flavors of
8 that. There is the claimant himself, there is a
9 survivor of a claimant, and then there is a
10 script for a co-worker. We're in the process of
11 computerizing that at the moment, and hopefully
12 we'll have the first draft of that finished this
13 week. It's in the process. Right now it's being
14 programmed in an Access format. Eventually we'll
15 migrate that over to a SQL server program that
16 will be more compatible with our long-range
17 goals.

18 We have done one interview only so far, and
19 that was done by hand. We hope not to do that
20 again. That's a fairly labor-intensive process.

21 Evaluation of completeness and adequacy of
22 the information, we've done an initial review of
23 a number of cases that have been sent to us. And
24 I mentioned that we are cooperating with the
25 contractor sites providing the information and

1 have given feedback to several sites regarding
2 what we really need, and that is we need to have
3 the individual monitoring data. We cannot have
4 summary information. That doesn't provide us any
5 useful -- it's somewhat useful, but doesn't tell
6 the whole story as far as the missed dose goes
7 and that sort of thing. So we're doing that.

8 As far as the atomic weapons employers go,
9 there appears at this point not to be any real
10 personnel data available at the atomic weapons
11 employers. There's a lot of information
12 regarding the source term that was there,
13 licenses that the AWEs possess, that sort of
14 thing, that we can sort of reconstruct a
15 plausible exposure scenario. But personnel
16 monitoring data is not there.

17 We are doing a data capture effort next
18 week. A NIOSH team will be in Germantown, and we
19 will be electronically capturing on CD-ROMs all
20 the atomic weapons employer information that
21 exists in the Germantown files at this time. And
22 then we intend to go back and further go through
23 some of the files to add to these things as we
24 progress.

25 Calculation of dose to the organ once we

1 evaluate the completeness and adequacy of the
2 data. I did mention last week, we have the IMBA
3 program available, Integrated Modules for
4 Bioassay Analysis. That is a stand-alone program
5 right now that we can use to perform internal
6 dose reconstructions. However, we are in the
7 process of working with a contractor to update
8 that program to add some features that are
9 desirable. I think I mentioned that this week.

10 And report dose reconstruction results, we
11 haven't done any official dose reconstructions as
12 of yet, but we're in the process at this point of
13 crafting what the report will look like. We
14 intend to have a standardized reporting format
15 that includes certain key aspects of the
16 information that we'd like to report, that sort
17 of thing. So we're working on putting that
18 together.

19 I mention program documentation on this
20 slide because I think it's an extremely important
21 aspect of this program. We take this very
22 seriously. We want to have some sort of pedigree
23 for down the line when cases become challenged or
24 questioned or whatever, that we can actually go
25 to a file and point to the individual procedure,

1 implementation guide or whatever that was used at
2 that time to perform a dose reconstruction.

3 In my mind there's four major parts of this
4 documentation, and that starts with the case
5 file. And all the case files that have come into
6 our site so far have been electronically imaged.
7 We're working with PDF files essentially, Acrobat
8 type files. I think we've scanned well over
9 100,000 pages of information so far into our
10 system. It's a nice system. We can tab the
11 individual files with markers, that sort of
12 thing. And we hope that we won't -- actually,
13 the paper copies will be there for the record.
14 But when the contractor comes on board, when
15 NIOSH staff work with these things, they'll be
16 available directly on your computer screen, as
17 they are now for our OCAS staff. It's a very
18 nice way of doing business.

19 The implementation guides, which we're here
20 to talk about in more detail later, are sort of
21 the guts of our dose reconstruction process. And
22 I think everyone on the Board should have a copy
23 of that by now. It is a draft, so please feel
24 free to provide comments. And as I mentioned,
25 Tim and Dave will address those later on.

1 I will say that we tried to craft them so
2 that they were much more specific than the rule,
3 but at the same time one cannot envision -- I
4 learned this early on in OCAS, is you cannot
5 envision all eventualities that are going to
6 happen. Surprises happen daily as to what type
7 of dose, what type of exposure a person had, how
8 it occurred, when it occurred, those sort of
9 things.

10 So the guides will provide a general
11 framework for how this is going to work, but
12 we're going to -- we have a plan to have these
13 little technical basis documents, which are sort
14 of interpretation documents that are specific for
15 cases that are unique, something that you
16 wouldn't want to cover every aspect in an
17 implementation guide. But if we're presented
18 with a situation that is extremely unusual, maybe
19 cover a few types of cases, we'll cover that with
20 a technical basis document.

21 And then we also intend to have the standard
22 operating procedures that are even more specific
23 in certain areas about how we do business. Right
24 now we're talking about having -- we have a
25 procedure draft that's in place that essentially

1 covers all the steps that are in the rule.
2 Everything we said we would do in the rule, it
3 kind of goes through step by step and ensures
4 that we've covered everything that we committed
5 to doing.

6 I'd like to shift gears a little bit now and
7 talk about the dose processing strategy. As I
8 mentioned, I think it's the heart of our system,
9 and I talked about this last week, or last time
10 we met. The low-dose processing strategy --
11 there's two strategies that we can do with the
12 bracketing at the ends of the spectrum, if you
13 will.

14 One is the low dose, where a person presents
15 with a fairly low exposure profile from their
16 work history, someone in the low, below ten rem
17 for sure range. We would start conservatively
18 using their monitoring data and perform an
19 initial evaluation using worst case assumptions.
20 A good example of that is a person who was
21 exposed external only, an administrative
22 personnel who may have visited the controlled
23 areas of the sites on an infrequent basis, had no
24 internal dose.

25 We could take and add into their record all

1 the missed dose from their external badge
2 results. I mentioned before if someone wore a
3 badge and there's a 30 millirem detection limit,
4 we could assign them a flat-out 30 millirem per
5 badge exchange, total up those doses, and
6 evaluate the probability of causation. And if
7 that probability of causation is extremely low,
8 then the dose reconstruction doesn't need to
9 progress any further. We've definitively -- we
10 bend it on the low side in an unbiased manner.
11 I've got some examples later of this that will
12 tie this together, I think.

13 Conversely, on the high-dose processing
14 strategy, it's the same thing except on the other
15 end, obviously. We could take an internal dose
16 case and only look at a piece of it. And if that
17 piece of the internal dose, those few bioassay
18 samples, results in a fairly large dose -- say,
19 for instance, to the lung from an internal
20 exposure event -- and just that one piece is
21 sufficient to create a probability of causation
22 that is well over the 50 percent limit, there's
23 no need for us to go through and calculate the
24 dose from each of those individual other bioassay
25 samples that are in a person's file.

1 If it's not, we need to go in a more
2 detailed fashion, and I think the next slide kind
3 of covers this. This was presented last time,
4 but the basic concept here is determine the organ
5 of interest and the possible mode of exposure.
6 And so in this case, if a person is, let's say,
7 for example, working with plutonium that has a
8 fairly low gamma component to it, one could
9 calculate their plutonium exposure.

10 If that probability of causation was
11 extremely low, we would go over to this branch
12 and look at the external component. We already
13 have judged that the external component may be
14 low, but we need to look at it, use some worst-
15 case assumptions there, adding in missed dose.
16 If that's also low, then we're complete. There's
17 no sense in continuing on.

18 On the other hand, if the probability is not
19 low but high, we take those few points and the
20 person's well over the 50th percentile based on
21 our evaluation, then we'll ratchet it down a
22 little further, tighten it up, take a
23 conservatively low estimate. If the
24 probability's still high, then the dose
25 reconstruction's complete.

1 So the idea is to work over to this complete
2 phase. However, there are going to be cases,
3 those in the middle, that will fall all the way
4 down through the bottom. And then we have to
5 take -- even after looking at both conservatively
6 low estimates, if the dose reconstruction is
7 still indeterminate, it's still unknown, then
8 it'll drop down here, and then we'll have to end
9 up doing a very complete analysis of the whole
10 case.

11 This is an example I talked about with an
12 external exposure case. If you look over on this
13 column there's a gamma exposure for the
14 individual, sums to about -- what is it -- 270
15 millirem actually on their badge results between
16 1954 and '61. And over here we've included the
17 missed dose, and the missed dose adds up to
18 somewhere in the vicinity -- I think it's 350
19 millirem if you total this column. This column
20 is a factor of five higher in dose than what was
21 reported by the actual badge results that we
22 received from the Department of Energy, so we've
23 increased their dose by a factor of five.

24 But if you look at this next example --
25 let's just say, for instance, this person

1 presented with prostate cancer. Even with all
2 the missed dose added in it's 1,350 millirem --
3 and this is just a graph of the probability of
4 causation of prostate cancer as a function of
5 total dose delivered -- and one can see that at
6 the 50th percentile, even for a fairly early age
7 at diagnosis at 40 years, the dose is somewhere
8 in the 30 rem range. So in this particular case
9 we would make a fairly -- it would be fairly easy
10 to conclude that if the Department of Labor were
11 to run this calculation using the IREP program,
12 the person would not be qualified for
13 compensation.

14 These graphs are sort of interesting. One
15 can see the effect of the age at diagnosis on the
16 probability of causation. There are a number of
17 factors, of course, in IREP that drive these
18 different curves. One is the age at diagnosis,
19 which I believe is related to just the increase
20 in the background incidence rate as you get
21 older, so the chance that your cancer was caused
22 by the radiation is diminished by the fact that
23 the background incidence is higher. So one can
24 see that these values are fairly well above the
25 one and a half rem range.

1 This is also going to be the case for
2 someone, for example, who was exposed internally
3 to something like plutonium, that only
4 concentrates selectively in essentially three
5 organs -- four if you count the gonads -- the
6 lung, liver and skeleton. So we could do a very
7 worst case assumption of what their inhalation
8 intake to plutonium may have been. The prostate
9 gland is very -- not very -- not irradiated
10 significantly at all from that exposure. So
11 again, their dose would be down into this range.

12 If you take a look at lung cancer, however,
13 on the other extreme end, here's a case where if
14 a person had -- again, I hate to keep using
15 plutonium, but it's a good example -- if a person
16 had inhaled plutonium and received a fairly large
17 intake that would result in a lung dose, and it
18 would not be inconceivable that person could have
19 inhaled enough plutonium to be in this 20 rem
20 range.

21 Remember, these values are equivalent doses,
22 not effective doses, so these are not multiplied
23 times the .12 for the weighting factor. So a
24 five rem annual dose limit, a person could easily
25 receive in the 20 to 25 rem range.

1 So for a non-smoker at the 50th percentile,
2 it's somewhere -- I can't see it very well from
3 here -- but 25 to 30 rem. So if we took that one
4 case where a person had one intake that was
5 fairly large, we estimate it was well over 25 to
6 30 rem, that person would be judged -- his dose
7 reconstruction would be complete, and it would be
8 forwarded on.

9 I show these graphs just to give a sense
10 we're working towards developing these tools for
11 our dose reconstruction people, so that we don't
12 -- we're not in the business of running the
13 probability of causation calculations, but we
14 need to develop these kind of tools that the dose
15 reconstruction people can use to do this
16 efficiency process, the bracketing at the extreme
17 ends.

18 I think the next slide is just an example of
19 the different probability of causations for
20 different cancers. This is for leukemia. The
21 solid cancers you can see were, in those examples
22 that I showed, were in the tens of rem range at
23 the 50th percentile. Leukemia, this is sort of
24 an optimum condition here: five-year latency
25 period, and a person is -- at 20 years old, you

1 can see it takes very small, much smaller amount
2 of exposure, in the one to two rem range, for a
3 person to qualify for compensation from leukemia.

4
5 So someone with an exposure profile in the
6 past that had a large missed dose component from
7 the external badge, in particular if they
8 developed leukemia at a fairly early age, it
9 would be pretty simple to determine if someone
10 had a missed dose that was in the three to ten
11 rem range, that the probability of causation
12 calculation, if run, would qualify that person
13 for compensation.

14 I'd like to switch over to talk a little bit
15 about radon. I mentioned before that radon is
16 unique in this program in the sense that there is
17 no -- there are no bioassay methods available for
18 radon. You can't take a urine sample or a lung
19 count or whatever, so we're going to basically be
20 doing exposure reconstructions.

21 The reason that we do the exposure
22 reconstruction is because that's what the PC
23 calculation is based on, cumulative working level
24 month exposure to the worker. And it's
25 essentially an adaptation of the risk model

1 developed by Jay Lubin, et al., at the National
2 Cancer Institute, which is based on the risk
3 values from the U.S. uranium miner studies.

4 An interesting feature of radon is one does
5 need to look at natural background. We're
6 looking at how we're going to deal with that.
7 One has to distinguish at some point the
8 difference between natural radon and DOE's radon.
9 There are fluctuations about the country. It may
10 be that if we can do the efficiency process
11 where, even including natural background and the
12 radon exposure, that the person is not going to
13 fall in a compensable region, it's okay, we don't
14 need to worry about that.

15 But it's been my experience that radon does
16 fluctuate quite a bit in the work place, and
17 we're going to have to develop some method to
18 deal with that. Fortunately, there are not that
19 many sites where radon is going to be an issue.
20 The well-known ones are the Fernald site,
21 Mallinckrodt. I used to run the dosimetry
22 program at Argonne National Laboratory. There
23 was a few areas that were contaminated back in
24 the early days that maybe there's some elevated
25 levels, but not that many. Actually, the

1 original site in New York where the residues went
2 from New York to Fernald, the K-65 material,
3 probably we need to look at.

4 But we do intend to include this. The way
5 the probability of causation calculation will
6 work is it will treat those independently. You
7 can have an exposure -- concomitant exposure to
8 external exposure and radon and run the program
9 through, and it will actually sum the two risk
10 values for you.

11 Unfortunately, monitoring records are
12 probably going to be fairly poor. Having looked
13 at the records at several of the sites that do
14 have radon issues, the monitoring records are
15 fairly poor. Very rarely were working levels
16 actually measured. Air concentrations were
17 taken, then one has to do some basic assumptions
18 about the percent equilibrium of the radon, that
19 sort of thing. So it's going to be a tricky
20 exposure reconstruction.

21 And my final slide, I just want to touch
22 base a little bit about atomic weapons employers.
23 They are somewhat unique in the sense that the
24 period of covered employment -- it's fairly
25 obvious for a DOE facility that the entire time

1 the facility was in operation is covered. An
2 atomic weapons employer, there is a covered
3 period where a person is eligible to be in the
4 program, but the covered exposure actually
5 extends beyond that. So we're in the position of
6 having to reconstruct records that go well beyond
7 the period of time at which the DOE was involved
8 in that operation. That's going to be a
9 difficult issue for us. We're working on that
10 right now.

11 Part of that is this residual contamination
12 study we have in place that was enacted recently
13 in an amendment to the Defense Authorization Act.
14 NIOSH was charged with doing a residual
15 contamination study at the atomic weapons
16 employers facilities to determine if the covered
17 employment period should be extended based on
18 contamination at the site that was left there
19 after DOE operations ceased. And so in looking
20 at that, I think what's going to give us a fairly
21 -- much better handle on what the exposure looked
22 like in those time periods after the workers no
23 longer -- after the DOE work was completed.

24 I touched on earlier about the availability
25 of personnel monitoring data. It's going to be

1 interesting. I don't know that many of them
2 actually -- atomic weapons employers actually
3 collected personnel monitoring data, so we may
4 have to rely more on source term analysis for
5 these particular employees than the DOE cohort.

6 One possibility does exist, though. We've
7 looked at a couple of these facilities that a
8 number of them on the list did not appear to do
9 very extensive processing of materials. A large
10 percentage of the atomic weapons employers are
11 uranium -- handled uranium as a result of --
12 Fernald site seems to be responsible for quite a
13 few of those. They were a manufacturing
14 facility, essentially a metals foundry, so they
15 would farm out certain pieces to try a new
16 rolling mill processor or whatnot. And in doing
17 that, it looks like there are some instances
18 where the facility itself did not handle fairly
19 large amounts of dispersible material; it was
20 solid metals.

21 So it may be that we can, again using an
22 efficiency process, look at some of these
23 facilities and determine that the dose is below a
24 certain level that would not result in
25 compensation for any of the employees in that

1 facility, and allow us to do that, evaluate that
2 in a white paper, a technical basis document,
3 publish it on our web site so people could review
4 our logic, and move forward without having to do
5 an individual dose reconstruction for anyone at
6 that particular facility. Anyway, that's the
7 concept on that at this point.

8 That concludes my formal remarks this
9 morning. If there are any questions, I'd be more
10 than happy to address them.

11 **DR. ZIEMER:** Thank you very much, Jim.

12 Keep in mind that we will be hearing a lot
13 of detail on both external and internal dose
14 reconstruction from our following speakers, Tim
15 Taulbee and Dave Allen. So this presentation by
16 Jim Neton has given us kind of an overview of
17 dose reconstruction, but let us take at least
18 early questions here.

19 Yes, Henry Anderson.

20 **DR. ANDERSON:** Are you setting this up so
21 you can put this data into an analytic database?
22 It would seem to me that as you gain experience
23 here you may find -- for instance, as you showed
24 with the leukemia -- that some specific diseases
25 or places will fall into then the special group.

1 So it would seem to me that based on looking
2 at this, you may be able to look at -- identify
3 classes of people that have come through, that
4 then you wouldn't have to run them through
5 because you'd always be confident, and therefore
6 they'd be moved into a -- this would be, rather
7 than being -- people having to petition, you
8 would have the actual data to show that of all of
9 the claims from this facility for this disease
10 coming through, they've all been well over your
11 threshold, and therefore it would make sense that
12 they would then move into the special category.

13 **DR. NETON:** Yeah, that's correct. We do
14 plan on doing that, to have essentially an
15 exposure matrix --

16 **DR. ANDERSON:** Yes.

17 **DR. NETON:** -- if you will, for certain
18 classes of workers, whether it's a chemical
19 operator at a certain facility, a uranium
20 facility, take advantage of this as we learn from
21 our dose reconstruction process.

22 **DR. ZIEMER:** Jim.

23 **DR. MELIUS:** Who is going to be doing the
24 interviews with the claimants?

25 **DR. NETON:** Well, NIOSH staff will initially,

1 since we don't have the dose reconstruction
2 contractor in place. But once the contractor is
3 in place, they will be doing the interviews.
4 There are certain -- the RFC, Request for
5 Contract, stipulates certain qualifications for a
6 person to be a qualified dose -- do an interview.

7 **DR. MELIUS:** Okay.

8 **DR. NETON:** Certain level of knowledge of
9 DOE facilities, certain educational background,
10 certain number of years' experience.

11 **DR. MELIUS:** And is the interview script
12 available? I haven't looked at the web -- is
13 that on the web site now, or is that --

14 **DR. NETON:** It's not on the web site
15 currently. I don't know that it couldn't be.
16 Larry might address that.

17 **MR. ELLIOTT:** It's not on -- the interview
18 questions and the script is not on the web site.
19 We have an emergency approval from OMB for --
20 under the Paperwork Reduction Act for that
21 script, and we're currently trying to -- we have
22 an application in for a permanent -- or an
23 approval of that script. We can put it up. We
24 can load it up on the site if --

25 **DR. MELIUS:** And could we also get a copy to

1 the Board?

2 **MR. ELLIOTT:** Sure, we'll do that. We'll do
3 that.

4 I would also like to comment on Jim's
5 comments on the AWEs. We do know that some AWEs
6 did have radiation monitoring data, like
7 Mallinckrodt, and we have a lot of that already
8 in our hands. But by and large, we're still
9 pursuing whether or not some of these AWE sites
10 have any, if at all --

11 **DR. NETON:** Right.

12 **MR. ELLIOTT:** -- personal dose information.

13 **DR. NETON:** There are over 300 AWEs, and
14 it's very hard to track -- some of them aren't in
15 business anymore, have been out of business for a
16 long time. In some cases the facility is no
17 longer even there. So we will be pursuing that
18 with some vigor in the next couple months.

19 **MR. ELLIOTT:** Also, the computer-assisted
20 telephone interview, when we have the contract in
21 place, those interviews will be done in the NIOSH
22 facility. The contractor will live with us doing
23 that.

24 **DR. NETON:** That's a good point. The
25 contractor's required -- we will provide them

1 space to do the interviews at a NIOSH facility,
2 primarily so we can actually get a handle on how
3 they're going and monitor the quality of what was
4 going on, since it's a very big piece of this
5 assessment.

6 **DR. MELIUS:** Again, refresh my memory. I
7 think I asked this last time also. But what
8 information will be given to the claimant prior
9 to the interview?

10 **DR. NETON:** They will be provided -- not
11 necessarily the entire script, but some
12 information as to what lines of inquiry we're
13 going to be going through in the interview. The
14 script right now, as I said, it sort of looks
15 like a fill-in-the-blank kind of thing. We could
16 use that, but I think we could cut it down a
17 little bit so that it wasn't as long and give
18 them the same information. But all the
19 information that we'll be discussing will be
20 provided to them prior to their interview
21 occurring.

22 **DR. MELIUS:** What about the exposure
23 information that's been received from DOE? Will
24 they be provided with that ahead of --

25 **MR. ELLIOTT:** We talk to them about that

1 over the phone during the interview process, and
2 we can make it available to them if they request
3 it. It's been our thinking that we wouldn't
4 automatically provide that because it might
5 prompt confusion with what they typically get as
6 reported cumulative annual dose from DOE.

7 So as we go through the interview process
8 we'll walk them through all the information we
9 have collected from DOE, what we have in our own
10 hands at NIOSH, and will explain the process of
11 going forward with evaluating that information
12 and how their interview questions will aid us in
13 doing dose reconstruction. So there's a highly
14 interactive process we envision dealing with the
15 claimant through the interview.

16 **DR. NETON:** In preparation for the
17 interview, the person that is conducting the
18 interview will go through the entire file,
19 including the DOE dose records that are
20 available, and use that to query in some depth,
21 customize it in some ways to the individual
22 claimant.

23 And we'll be looking for things like
24 consistency. If a person says they wore a badge
25 all the time and we received a report from the

1 Department of Energy that they have no monitoring
2 information at all, that's going to take us down
3 a different path. Or if a person was involved in
4 a number of incidents and we have those incident
5 reports, it'll be interesting to compare notes as
6 to what the claimant states versus what's in the
7 official record, that sort of thing.

8 **DR. MELIUS:** Yeah, but I guess my concern
9 would be there's -- if you do it the way you
10 described it, I think that's good. If you did it
11 the way, well, I have your records from '55 to
12 '65, we have all your exposure records so we
13 don't need to talk about that, or -- and they
14 just say okay without knowing what's there, or
15 especially with someone with sort of a
16 complicated work history, that could be
17 problematic.

18 **DR. NETON:** This is going to require some
19 level of expertise on the interviewer to do a
20 good job. We've already recognized certain
21 instances -- if you ask a person did you ever
22 wear a badge, a monitoring badge, or were you
23 ever assigned a badge, and they say, well, no;
24 but in pursuing the conversation we find out
25 that, well, they were not assigned a badge, but

1 they visited areas that required a badge and were
2 issued temporary badges every month. So we would
3 have never known that if a person didn't have
4 good interview techniques. So it's going to
5 require some skill.

6 **MR. ELLIOTT:** The intent of our interaction
7 through this interview is to elicit information
8 from the claimant that might aid us in going back
9 to DOE seeking additional information that might
10 not have been forthcoming. And we're not only
11 hoping to get that, but if there's situations
12 that no DOE record would support, we're asking
13 the claimant through the interview process to
14 identify co-workers that can verify or validate
15 your claim, this aspect of your claim, and we'll
16 get an affidavit from that individual.

17 **DR. MELIUS:** A related question, and I think
18 it's sort of the same issue, approaching it from
19 a different -- tell me if you're going to present
20 this later, because I haven't gone through all
21 your slides yet. But how are you going to judge
22 the completeness of the data that you're
23 receiving from the DOE and/or the facility?

24 You've got a number in the draft regulation,
25 you list a number of items you'll look at. But

1 that's a wide range, and it's a lot of
2 information. And how are you going to sort of
3 collectively build up your knowledge base that
4 you can judge what's complete? You want an
5 efficient process. At the same time you also
6 want to make sure that you're getting as much
7 information as is there and is relevant to the
8 person's case.

9 **DR. NETON:** That's a real good question. In
10 the beginning the process is not going to be as
11 efficient as we'd like, because we're requesting
12 these individual cases, we're getting a file. We
13 don't really have a sense that we've got
14 everything that may be available to us.

15 So we've envisioned early on is to have a
16 parallel process in place where we will actually
17 be collecting the DOE's records themselves and
18 bring them in to NIOSH, putting them on our own
19 computer system, developing that database, so
20 we'll have a sense as to what information the DOE
21 really has available, such as the work place
22 monitoring information, air sampling data, that
23 sort of stuff. But we need to get onto the DOE
24 sites, get there, talk to the people that have
25 these records, and determine if this information

1 is actually even available in a reasonable time
2 frame, because time is a critical issue.

3 **DR. MELIUS:** But how will you -- will that
4 also include going out and getting the
5 information from the contractors as opposed to
6 what DOE has collected? My experience has been
7 that the DOE offices don't always have as
8 complete information as the contractor will.

9 **DR. NETON:** That's correct. And in reality,
10 most of the information's coming from the
11 contractors already. The Department of Energy
12 really doesn't have a repository per se of all
13 the information we need. We are working through
14 the operations offices, the DOE operations
15 offices. But then once they forward that to the
16 contractor, we're interacting with them directly.
17 Once the packet has been forwarded to, say, the
18 Savannah River site or Hanford or whatever, we're
19 in communication with the contractor. And that
20 would include visits to the contractor's site.

21 **MR. PRESLEY:** Bob Presley.

22 One of the things that I think you need to
23 ask, make sure that you get multiple sites. A
24 lot of the people, maybe they worked at one site,
25 but they visited other sites during their work

1 experience where they would have gotten a
2 contamination dosage at some other site.

3 **DR. NETON:** Was the question how are we
4 going to deal with that issue?

5 **MR. PRESLEY:** Yes. Are you doing to deal
6 with that issue?

7 **DR. NETON:** Oh, absolutely. We intend to
8 deal with that. And a lot of that is going to be
9 either based on the record that is in the
10 person's file -- DOE has kept track of that to a
11 certain extent, but not perfect, I might say --
12 but also this is where the interview process
13 comes in. If a person can inform us as to where
14 they went, what they did and how often, what time
15 period, we'll pursue that at that other site. So
16 we certainly have to include that in the record.

17 **DR. ANDERSON:** Going back to the previous
18 presentation, it seems to me the only time you'll
19 move to interviewing somebody is if you have not
20 -- if the records you've already received would
21 not qualify them for a sufficient exposure.

22 So really what you're doing -- it'll be
23 important. If that's the case, then it would
24 seem to me sharing what you already have with the
25 worker so they can see the completeness of it

1 would be very important, because unless you
2 interview everybody the reality is those people
3 who have qualified you would already have short-
4 circuited out of the system; those who are very
5 low would be out; and these are the only ones
6 that you're still building their dose, and you're
7 looking for other exposures that may not have
8 been in your base information.

9 **DR. ZIEMER:** Larry has a response.

10 **MR. ELLIOTT:** Dr. Anderson, we will be
11 interviewing everybody, okay. And the level of
12 detail we get into the interview will depend upon
13 the complexity of the work history, how many
14 sites they worked at, how many different
15 radionuclides they might have been exposed to.
16 So everybody will get an interview. Everybody
17 will be able to contribute to their case file
18 through that interview.

19 **DR. ANDERSON:** Because I thought in the
20 previous, it looked like it was a step-wise, that
21 if through kind of an administrative review the
22 person would qualify for compensation, you would
23 move them into that range rather than go through
24 further interviews and whatever. If you're going
25 to interview everybody, then that's a different

1 scenario.

2 **MR. ELLIOTT:** To achieve the efficiency
3 process --

4 **DR. ANDERSON:** Yeah.

5 **MR. ELLIOTT:** -- we have that intent in
6 mind, to try to categorize the claims as they
7 come forward. Those that are obviously high
8 enough that they're going to get an award, but
9 they'll still get an interview. Those that are
10 obviously low enough that they're not going to
11 achieve an award through the final adjudication
12 will still have an interview, and we'll use that
13 information to make sure that -- again, we're
14 trying to achieve an accurate estimate of dose
15 here as much as possible.

16 **DR. ANDERSON:** Okay.

17 **DR. NETON:** There may be something that
18 comes up in the interview, if a person appears to
19 be qualified on face value, that might be helpful
20 for someone else's case.

21 **DR. ZIEMER:** Sally.

22 **MS. GADOLA:** I have a question that goes
23 along those lines.

24 Suppose you get someone, after all the
25 radiation dose reconstruction is done, it looks

1 as if their cancer was not caused by radiation.
2 However, it might very well have been caused by
3 other chemicals that they worked with in that
4 environment. Is anyone going to be advising
5 them, because then they would want to apply to
6 the state worker's comp?

7 **MR. ELLIOTT:** That comes back to the
8 Department of Labor's responsibility at the point
9 of adjudicating the claim. And when our dose
10 reconstruction report goes forward to DOL and to
11 the claimant, and DOL uses that information from
12 the dose reconstruction report in the probability
13 of causation in the IREP and they find that
14 they're below the 50 percent mark and their
15 recommended decision is not to award, then I
16 assume that the Labor Department and DOE will,
17 through their outreach program and their worker
18 advocacy program, encourage the claimant to
19 pursue the Subtitle D aspect of the program,
20 which is through the state worker's comp program
21 through the physician panels that DOE sets up.
22 And any dose reconstruction that we have done on
23 radiation would just travel along with that case
24 file for that individual.

25 We do not, though, in our program here on

1 doing dose reconstruction for cancer-related
2 claims, we are restricted to radiation exposure.
3 We are not including chemical exposures.

4 **MS. GADOLA:** I understand that, but I'm just
5 concerned with the workers, and especially the
6 survivors, who would not even know what type of
7 questions to ask, because they would not know
8 what their family members might have worked with.
9 Thank you.

10 **DR. ZIEMER:** Other questions or comments?
11 Jim.

12 **DR. MELIUS:** Are you allowed to do more than
13 one interview under your OMB approval?

14 **DR. NETON:** Yes, nothing precludes us from
15 doing more than one.

16 **DR. MELIUS:** Okay, good.

17 **DR. ZIEMER:** Whatever it takes, probably.

18 **DR. MELIUS:** Yes, I could see it being a
19 step-wise process with certainly some claimants,
20 where they tell you something that wasn't in the
21 records you've got. You go back, get that
22 information you need to then ask them further
23 questions, and --

24 **DR. NETON:** In fact, with survivors that
25 would probably be routine. We will obtain names

1 of co-workers, just for the reason the person
2 will say, well, I don't know what my husband or
3 wife did at the site. It was classified. And so
4 we'll try to obtain names of co-workers who still
5 may be alive and work it through that way.

6 **MR. ELLIOTT:** The interaction with the
7 claimant through the interview instruments that
8 we've designed, we envision it to be very
9 dynamic. It's going to have to be malleable to
10 the situation.

11 We've envisioned it that we're going to have
12 to not do some of these by telephone. We're
13 actually going to have to do some of these
14 interviews face to face. We're going to have to
15 do some of these interviews with a Q-cleared
16 interviewer in an environment where the
17 discussion cannot be overheard. We're going to
18 have to do some of these interviews with
19 assistance to the claimant who perhaps cannot
20 hear, cannot speak.

21 We're going to have to do some of these
22 interviews where we give advance time and
23 opportunity for the claimant to go through the
24 questionnaire and prepare themselves because --
25 and we're going to have to fractionate some of

1 these interviews so that we don't consume an
2 individual's energy in the interview process, and
3 we have to go back to them and finish it up maybe
4 two or three, in two or three sessions.

5 So we've envisioned this to be a very
6 dynamic interaction that is situation-dependent.

7 **DR. ZIEMER:** Which means that it will also
8 be a time-intensive process, clearly, yes.

9 Other questions or comments?

10 (No response)

11 **DR. ZIEMER:** Okay, thank you very much, Jim.
12 Appreciate that overview, and the questions were
13 very helpful as well.

14 I'd like to proceed to the presentation on
15 external dose reconstruction guidelines. Tim
16 Taulbee of NIOSH is with us today. This item on
17 the agenda was originally scheduled for this
18 afternoon, but we do have, I think, time now for
19 both the presentation and the questions.

20 And Jim (sic), in connection with your
21 presentation, you're talking about the draft
22 internal (sic) dose reconstruction guideline, I
23 believe, that was distributed to the Board
24 members in advance. Is that correct?

25 **MR. TAULBEE:** I'll be talking about the

1 external --

2 **DR. ZIEMER:** Yes, I said -- and I said
3 internal. I grabbed the wrong one. I meant --
4 everybody knew I meant external, right? Right.

5 So Tim, please.

6 **MR. TAULBEE:** Thank you, Dr. Ziemer.

7 I'd like to thank the Board for this
8 opportunity to talk to you about external dose
9 reconstruction as we currently envision it. And
10 this is a draft. This is our approach as it is
11 now, and we're eager to hear your thoughts and
12 comments on this.

13 What I'd like to do is to try and take you
14 through a dose reconstruction from us receiving
15 data from the Department of Energy, dosimetry
16 data, and how we would compile all of this and
17 get to the inputs that -- the data that we would
18 enter into the IREP program. So that's kind of
19 the approach that I would like to take today in
20 discussing the external dose reconstruction
21 process.

22 Basically there are two types of dose
23 reconstruction: One where have personal
24 monitoring data, which is for the vast majority
25 of the claimants. These are people that worked

1 at Department of Energy sites. And then the
2 other type of dose reconstruction would be where
3 we don't have personal monitoring data, where
4 we'd use co-worker data or survey data, source
5 term data and possibly even radiological control
6 limits.

7 From the guideline that was given to you
8 prior to the meeting here, the personal
9 monitoring data is section two; the no personal
10 monitoring data would be section three. What I'm
11 going to focus on today is when we have personal
12 monitoring data. Like I said, this is going to
13 be the typical process going through, where
14 somebody worked at a Department of Energy site
15 and they were monitored with film badges or
16 thermoluminescent dosimeters.

17 **DR. DeHART:** Could I ask whether or not we
18 can interrupt for questions as we go along,
19 because there's going to be definitions going
20 through here and it's going to get technical.

21 **DR. ZIEMER:** Do you have any objection to
22 taking questions as they arise?

23 **MR. TAULBEE:** No objection whatsoever.

24 **DR. ZIEMER:** Let's do that, then.

25 **DR. DeHART:** I have one question -- I think

1 I know the answer -- but source term is a term
2 that I'm not really familiar with. I assume that
3 would be an isotope or something of that sort?

4 **MR. TAULBEE:** That's correct. The source
5 term information would be that at a particular
6 uranium machining facility, we know the quantity
7 of material, of uranium that was sent to them for
8 processing, and we know basically what they were
9 doing. They were milling it or they were
10 machining it. And so from the dimensions of what
11 they were starting with, we can estimate what
12 their external dose is based upon the quantity of
13 radioactive material.

14 So I guess the primary thing I'm going to
15 focus on is where we have personal monitoring
16 data. And so there are four basic components or
17 elements to the dose reconstruction, and the
18 first one is discussing the different components
19 of external dose; and then the conversion of that
20 external dose to an organ dose for the
21 probability of causation; and then defining the
22 uncertainty and determining the distribution
23 surrounding this external dose that we come up
24 with; and then the actual interface into the IREP
25 program.

1 With external dose -- and you've seen some
2 of these slides before that Jim had briefly gone
3 over in his previous presentation here; please
4 pardon me repeating some of them as I go into
5 more detail -- but there's four basic components.
6 There's the measured dosimeter dose, where a
7 person wore a film badge or a TLD at the site.
8 There's what we call the missed dose, or what the
9 dosimeter couldn't read due to a limit of
10 detection and a combination of the badge exchange
11 frequency. And then there's the occupational
12 environmental dose. This would be primarily from
13 stack emissions and from other ambient sources
14 around in the work environment. And then their
15 occupationally derived medical dose. And the sum
16 of these is what we consider the total dose to
17 the individual.

18 We're starting with the dosimeter dose.
19 This is a simple summation of all of the
20 dosimeter readings that we got from the site
21 where you add them up. And the uncertainty --
22 each dosimeter reading will have an associated
23 uncertainty with them. And you combine them by
24 summing the variances, and the standard deviation
25 is calculated by the square root of the sum of

1 the variances.

2 To give an example for this, this would be
3 an individual in Hanford facility at 1951, and
4 these were all of their non-zero badge readings
5 for that particular facility or for this
6 particular year of exposure. And what I'd like
7 to point out here is this is 12 readings. Well,
8 the individual actually had 39 dosimeter readings
9 over the course of this particular year. These
10 are the 12 that were non-zero, so this is what
11 we're considering the dosimeter dose, the actual
12 dose that was measured. And the sum of them
13 comes out to 415 millirem with a standard
14 deviation of 49 millirem.

15 **DR. ZIEMER:** Let me interrupt at this point
16 and ask kind of a practical question.

17 Clearly in 1951 the rem unit didn't exist,
18 so their numbers would be in some other unit,
19 maybe rep, maybe -- I guess if you go back, even
20 some of the facilities were using what they
21 called a sunshine unit, and I don't even remember
22 what that is anymore. But the numbers that you
23 get, you're not assuming these are millirem to
24 start with, so you're --

25 **MR. TAULBEE:** No, that is correct.

1 **DR. ZIEMER:** -- this is a converted number
2 that you're showing us to start with. Is that
3 correct?

4 **MR. TAULBEE:** Actually, it's not. I
5 misspoke there, and I apologize for that.

6 **DR. ZIEMER:** Okay.

7 **MR. TAULBEE:** These are in milliroentgen at
8 this time. Later on you'll see that I'll go
9 through a conversion in which we will get to the
10 actual organ dose, which will then be in rem from
11 that standpoint.

12 **DR. ZIEMER:** Right. Because you're going to
13 have a hodgepodge of units for anything before --

14 **MR. TAULBEE:** Absolutely.

15 **DR. ZIEMER:** -- about the mid-fifties to the
16 late fifties.

17 **MR. TAULBEE:** That is correct, yes.

18 **DR. ZIEMER:** Okay.

19 **MR. TAULBEE:** I apologize there. And as you
20 see, the slide is incorrect there at the bottom.
21 This really is milliroentgen, mR. This is an
22 exposure for this particular example.

23 What we assume for the dosimeter dose is
24 that it's following a normal distribution in
25 which the mean was calculated as the average of

1 this distribution, the 415 millirem (sic), and
2 then the uncertainty associated with it, two
3 standard deviations or 95th percent uncertainty,
4 it'd be 513 millirem -- milliroentgen.

5 So now the missed dose. Right now what I've
6 showed you so far is what we've actually measured
7 with a dosimeter on an individual. The missed
8 dose is what the dosimeter couldn't measure due
9 to a limit of detection and then the badge
10 exchange frequency. In earlier years the badge
11 exchange frequency at many facilities was weekly.
12 By modern standards it's in many cases quarterly.
13 And so there's a longer time period that dose can
14 be measured, and the limit of detection has also
15 decreased.

16 So really missed dose is primarily important
17 in very early monitoring time periods. And the
18 root of the missed dose is really the number of
19 badges that have been recorded as a zero
20 measurement. And I mention that it's been
21 recorded as a zero measurement, not necessarily
22 that that's what they measured. At some
23 facilities they could measure lower. However,
24 they had administrative practices to where they
25 would not record below 30 mR, even though they

1 could measure at a lower dose.

2 For the missed dose determination we're
3 assuming a lognormal distribution with -- and the
4 geometric mean would be calculated by the number
5 of zero dosimeters times the limit of detection
6 divided by two. This is kind of the central
7 estimate.

8 Yes?

9 **DR. ROESSLER:** I should have waited until
10 you got done with your sentence.

11 You've already talked about two different
12 probability distributions, and we had some last
13 time. At some point will we get some discussion
14 on the rationale for choosing the different
15 distributions? Because they do look different,
16 and the outcome can be different, quite a bit
17 different, depending on which one is chosen. I'm
18 not asking for it right now, but I think that's
19 something that we need to have a little tutoring
20 on.

21 **MR. TAULBEE:** Certainly. The thought behind
22 the lognormal distribution for missed dose goes
23 back to looking at individuals' doses as a whole
24 over their entire work history. They tend to
25 follow a lognormal distribution. And that's why

1 the component of missed dose we're assuming is a
2 lognormal at this time, because of that.
3 Underlying distribution of all of their data
4 should be lognormally distributed.

5 The reason that we're using the normal
6 distribution for the dosimeter dose is because we
7 have a lot of individual measurements that have
8 an uncertainty about them, and we generally
9 believe that it's going to follow more of a
10 normal for a particular year. And that's kind of
11 the key across this, is making a transition in
12 there.

13 We could use a normal distribution; that's
14 possible for this particular scenario. My own
15 experience so far, from looking at a lot of this
16 data and below detection limit data and some of
17 the research that I've done in the past, is
18 indicating that it's more lognormal.

19 Yes?

20 **DR. NETON:** I'd just like to add to that,
21 Dr. Roessler.

22 I think the first -- the measured dose on
23 the dosimeters is really -- I think this is
24 correct -- is really just the instrument
25 detection -- the air on the instrument

1 measurement itself, and that's typically normally
2 distributed in a laboratory environment. Every
3 time you measure something it's plus or minus a
4 certain percentage, essentially. I think that's
5 the main reason for the normal distribution for
6 the doses that are detected. And when you sum
7 them, you end up with just a broader normal
8 distribution.

9 On the missed dose determination, though --
10 Tim has demonstrated this in a paper he presented
11 at the Health Physics meeting last year -- that
12 missed doses typically are normally distributed,
13 and I think Straume and others have demonstrated
14 this as well. So there's some technical logic
15 behind it, but we'd be more than happy to
16 document that better as to the selection of those
17 doses.

18 I think in the end result Tim will sum up
19 and show you how we ended up taking all these
20 different distributions and coming out with a
21 final product, which is I think where he's
22 heading.

23 **MR. TAULBEE:** Okay. And then to continue
24 on, the upper 95 percent, the number of
25 dosimeters times the limit of detection to get

1 the upper bound of what we estimate the missed
2 dose to be.

3 To give an example, following along with the
4 previous individual, 39 weeks they were monitored
5 in a radiological area, or nine months. They had
6 12 positive readings, 27 zero readings, and the
7 limit of detection was 30 mR. And the geometric
8 mean, then, in going through the calculation,
9 would be 405 millirem with the upper 95 percent
10 bound at 810 mR.

11 This would be the lognormal distribution
12 that will be -- all of these distributions, by
13 the way, will be coming back toward the end as we
14 begin to roll them all together, so I'm trying to
15 show how we create each one individually before I
16 sum them all together. And again, the geometric
17 mean in this general shape there with the missed
18 dose.

19 With the environmental dose -- and as Jim
20 had indicated in the previous presentation here,
21 and as I said earlier -- this is primarily from
22 stack emissions, from ambient environment. There
23 are certain locations at different facilities --
24 I believe you've seen a graph of the Hanford
25 facility where you can see the plume and how it

1 moved in different areas -- and that's what we're
2 talking about with this environmental dose.

3 And how we calculated it is the number of
4 months that they were in the area, the average
5 monthly dose rate for that particular year of
6 interest, and then an occupancy factor. And the
7 reason we use an occupancy factor here is that
8 these average dose rate measurements were
9 primarily 24 hours a day, seven days a week, four
10 weeks out of the month, and the 12 months out of
11 the year. So they're a summation, but most
12 workers aren't at the facility that entire time.

13 From the interviews that we do -- at least
14 in the limited experience that we have now -- the
15 worker was able to identify certain time periods
16 where they were working overtime, where they were
17 working extended periods for a long -- seven days
18 a week for a period of five or six months. And
19 so that occupancy factor then can be adjusted to
20 account for that additional time, then, on-site.

21 **DR. ZIEMER:** Tim, I have a question on this.
22 This is on-site dose. It's submersion cloud,
23 submersion type of thing.

24 **MR. TAULBEE:** That's correct.

25 **DR. ZIEMER:** Largely gamma then -- well,

1 could be beta, but let's say gamma.

2 Are you assuming that the badge did not pick
3 this up?

4 **MR. TAULBEE:** Yes. In many cases the badge
5 -- there was a control badge in the general area
6 of where the worker was that was then subtracted
7 out when the measurements were done.

8 **DR. ZIEMER:** So the control badge picked it
9 up and it was removed. I see.

10 **MR. TAULBEE:** That's correct.

11 **DR. ZIEMER:** Okay, thank you.

12 **MR. TAULBEE:** And so the calculation then
13 for the environmental dose would be the number of
14 months, the average dose rate and the occupancy
15 factor, 129 millirem for this particular year.
16 Again, we're assuming an environmental -- or a
17 lognormal dose distribution. Again, this comes
18 from experience of environmental doses.
19 Environmental measurements tend to follow more of
20 a lognormal type of a distribution, so the
21 geometric mean of 129 millirem in the upper 95
22 percent of 500 mR.

23 So those are three dose components. The
24 fourth and final one would be the occupational
25 medical dose. And this comes from medical

1 monitoring that was going on at the facility,
2 where they were given chest X-rays during routine
3 physicals or during special screening that was
4 ongoing.

5 In some of the early time periods we have
6 found evidence where if you worked at a uranium
7 facility, twice a year you were taken over and
8 given a chest X-ray. We're not quite sure why
9 they were doing this for just uranium workers,
10 but it's there in the records that this was going
11 on. I found it in procedures from Los Alamos in
12 1947 that this was going on. And so we're -- and
13 actually during a claimant interview they had
14 also indicated that every six months they were
15 marched over and given a chest X-ray for
16 monitoring.

17 What we're proposing is to look at the
18 number of the examinations in that year and then
19 the dose from the diagnostic procedure, and
20 summing them together for this occupational
21 medical monitoring dose.

22 The example that I'm going through right now
23 doesn't have a medical monitoring dose, which is
24 why now you'll see that for this particular
25 example that I've been going through this dose

1 would be zero. They weren't monitored at all for
2 that year.

3 **DR. ZIEMER:** Tim, I assume now that on the
4 medical monitoring dose, whether or not you use
5 that would depend on the cancer site.

6 **MR. TAULBEE:** That is correct, yes. If it
7 is --

8 **DR. ZIEMER:** You don't automatically add
9 this in --

10 **MR. TAULBEE:** No, if they -

11 **DR. ZIEMER:** -- before you do probability of
12 causation, unless it would -- assuming it's a
13 chest X-ray and there's lung cancer, that's one
14 thing. If there's -- well, you know what I'm
15 asking.

16 **MR. TAULBEE:** Exactly. If there is a -- for
17 instance, if it's skin cancer and it's on their
18 hand, for instance, certainly we would not be
19 adding this in from that scenario.

20 **DR. DeHART:** But leukemia might be a problem
21 as well, with this as essentially a total thorax
22 radiation.

23 **MR. TAULBEE:** That is correct, yes. And the
24 actual -- there are some differences as to which
25 tissues get irradiated that I'll get to here in a

1 minute with dose conversion factors, and that's
2 part of why we do this, because of the energy as
3 well.

4 Yes, Dr. Roessler.

5 **DR. ROESSLER:** I can picture this dose from
6 diagnostic procedures as being overwhelming any
7 other dose that they might have received to,
8 let's say, if it's a chest X-ray, to the lung.
9 And I can also picture that it will differ -- we
10 know it'll differ from year to year depending on
11 the equipment, and we know it's going to differ
12 maybe from one site to another. So it seems like
13 this, to really define this D_i is going to be an
14 important part of what you do.

15 **MR. TAULBEE:** That is correct. We do know
16 in early years, from studies that have been going
17 on at NIOSH at some of these DOE facilities, in
18 particular the K-25 plant, the type of X-ray
19 machine that they were doing, and have come up
20 with dose calculations. In early time periods
21 the doses can be very, very significant,
22 especially when photofluorography was going on.
23 But now is -- more from a modern standpoint with
24 the standard 11 by 17 chest X-ray, the doses are
25 relatively low, orders of magnitude lower than

1 what they were back in that time period. So,
2 yes.

3 **DR. ZIEMER:** Let me follow up on that. Are
4 there in the old records data sets that indicate
5 what the beam outputs were? Did people calibrate
6 those X-ray machines on site like they do in
7 medical facilities now, so we have beam output
8 data? Do we know that they had filtered beams
9 and so on?

10 **MR. TAULBEE:** In many cases from the
11 procedures -- one of the nice things about the
12 Department of Energy is you typically didn't do a
13 whole lot unless you had a procedure to do it.
14 And so a lot of this was documented in
15 procedures, and we have found some of the
16 evidence of that. Is it going to be the case at
17 all facilities? That I don't know. I would
18 imagine some of the smaller facilities with lower
19 budgets, this data might be more difficult to
20 come up with, in which case we're going to have
21 to do some general assumptions based upon the
22 larger facilities.

23 **DR. ZIEMER:** And I think there have been
24 studies on medical X-rays. I think the state of
25 Illinois, for example, looked at this

1 extensively. And for given settings -- mAs, kVp
2 settings -- you get a wide variation of doses,
3 depending on such things as filtration of the
4 beam, that can really affect the patient dose
5 considerably, and film speeds and so on.

6 **MR. TAULBEE:** That is correct, yes.

7 **MR. ELLIOTT:** Just so we're all clear here,
8 this would be perhaps one element of additional
9 information we'd go back to the DOE site to seek.
10 And we're going to find verification of this
11 coming from the interview, but also when we go to
12 seek records from DOE to support this, we will
13 likely go to the medical files that may have not
14 been provided with the case file that we get from
15 Labor.

16 And additionally, I want us to make sure
17 that everybody understands we're not talking here
18 about diagnosis using X-ray or therapeutic
19 radiation from a medical standpoint from a
20 private, personal physician for health reasons.
21 These are occupationally-required medical
22 procedures to hold the job.

23 **MR. TAULBEE:** Yes.

24 **DR. DeHART:** Just as a point, and I don't
25 know whether this has been discussed anywhere

1 along the way, but let's take a worker who's
2 injured on the job who -- for example, the back,
3 and undergoes a series of X-rays because of his
4 back. That's therapeutic, but it's job-related
5 under worker comp. Has that been touched at all?

6 **DR. ZIEMER:** You're complicating their lives
7 here, Roy.

8 **MR. TAULBEE:** We have had some discussions
9 about that, but in general what we're primarily
10 focusing on is just the screening, not from an
11 accident that would occur because -- from a
12 standpoint of a worker is injured, and they left
13 the facility and went to their own private
14 physician to get those X-rays. Then we would
15 have no knowledge of that particular information.

16 **DR. NETON:** I'd just like to add something
17 about the medical X-rays. Before everyone gets
18 the idea this is going to be enormously complex
19 and labor-intensive to do, we have to go back to
20 the efficiency process that we were talking about
21 earlier, where a person with a very low dose
22 record who had six or seven X-rays, if we could
23 take the highest X-ray output that we've seen and
24 add them to that person's record and it still is
25 non-compensable, then our work load is much less

1 in that case. So this is only going to be
2 extremely important for these people who are sort
3 of on the borderline.

4 **MR. TAULBEE:** Okay. So now we've got the,
5 to recap, we've got a dosimeter dose
6 distribution, and then a missed dose distribution
7 and environmental dose distribution, and now we
8 need to convert these to an organ dose.

9 The primary factor in the conversion to the
10 organ dose is what's the primary cancer. What is
11 the target organ, whether it's bone marrow for
12 leukemia; or lung cancer, the lungs; the liver.
13 For each different organ there are different dose
14 conversion factors that can be found in ICRP 74,
15 which is where all this data is coming from.

16 There's some additional factors affecting
17 the conversion, these dose conversion factors.
18 And that's the monitoring device, whether it was
19 a film badge or whether it was a TLD, and how it
20 was calibrated. Was it calibrated on a phantom,
21 or was it calibrated in free air? And then the
22 two other factors are the energy of the emission
23 and the exposure geometry.

24 To give an example of the monitoring device
25 and some of the differences you can see from a

1 dose conversion standpoint, this is for the same
2 photon energy of 100 keV from the AP geometry, or
3 the anterior/posterior geometry from front to
4 back. You can see for three different organs of
5 interest the dose conversion factor can vary
6 quite widely, depending upon -- the red bars are
7 what we call the personal dose equivalent, which
8 is the modern standard, or Hp(10), and then the
9 green bars are the target dose per exposure or
10 per Roentgen, with a free air type of calibration
11 and no phantom. And as you can see if you look
12 at the lung cancer example, the dose conversion
13 factor would be .7. You take the monitoring
14 dose, multiply it by .7 to get the organ dose if
15 the monitoring data was in the modern standard of
16 Hp(10), whereas in the historic standard you'd
17 multiply by 1.1. So the dose, the organ dose,
18 would actually increase where -- by older
19 standards, and be decreased by modern standards.
20 But this is what the organ dose is to the
21 particular cancer site of interest.

22 Within the -- in looking at this particular
23 curve, the actual dose conversion factor is a
24 continuous function of photon energy that I'm
25 presenting here. This is the dose conversion

1 factor for the Hp(10) or the modern standard.
2 And what you can see is, well, what value do we
3 actually use within this continuum of actual
4 values?

5 And what I've -- this is for bone marrow and
6 from the AP geometry. And what I've got here is
7 three different -- the bars on there are set up
8 based upon the IREP program. There are three
9 photon energies that we have within there from
10 zero to 30 keV, from 30 to 200, and then greater
11 than 200 keV. What ICRP 74 recommends is that
12 you integrate the area under the curve to come up
13 with an average dose conversion factor over that
14 energy band, and that's what we've done in this
15 particular example.

16 Now in addition to the energy band is you
17 have the exposure geometry, which can also affect
18 the dose conversion factor. And if you look at
19 greater than the 200 keV component here, you'll
20 see that for four different geometries you can
21 come up with four different dose conversion
22 factors. So what we're concerned with is which
23 one -- what do we use in order to calculate what
24 the organ dose is from the monitored dose?

25 Well, what we've come up with is to use what

1 I'm going to call the likeliest dose conversion
2 factor, and this is to use a weighted approach
3 based upon the job that the individual was doing
4 and knowledge that we have about the exposure,
5 and upon the interview, if they can give us any
6 information about what they were doing on the
7 particular job, where the hazards were located.
8 And in doing so, then we can weight their
9 percentage of time for the different -- for their
10 tasks in order to come up with this weighted dose
11 conversion factor.

12 If you can think of, in the example here, a
13 person working at a glove box line, 90 percent of
14 their time they're going to have their hands in
15 the gloves, and the exposure's going to be coming
16 from the front of them in the AP geometry. But
17 walking in and out they're going to be walking by
18 glove box lines, and so they're going to have
19 more of a rotational type of a geometry. So
20 using the weighted approach, we can come up with
21 a weighted dose conversion factor.

22 Now we recognize this is quite uncertain,
23 that we don't really know for sure what exposure
24 geometry the individual experienced, how they
25 received their exposure. So what we're proposing

1 is to use a range, from the lowest within the
2 energy band of interest to the highest dose
3 conversion factor. And since we know the lowest
4 dose conversion factor and the highest, and we
5 think we know what the likeliest is, we can
6 easily set up a triangular distribution.

7 And this gets back to how we came up with
8 this. We really don't have any other information
9 to try and base this on other than a lower bound,
10 an upper bound, and what we think the central
11 tendency of the distribution is. And so this is
12 why we're proposing to use a triangular
13 distribution for the dose conversion factor.

14 Now I've talked about the dosimeter dose,
15 the missed dose, the environmental dose, and now
16 dose conversion factors and how we get them all
17 into an organ dose. And then now the final
18 uncertainty, it's easier to describe altogether;
19 but as I mentioned, to recap the dosimeter dose
20 was a normal distribution. The missed dose was
21 lognormal. The environmental dose was lognormal,
22 and then the dose conversion factor is
23 triangular.

24 Using a Monte Carlo sampling technique, we
25 can go through and sample from each distribution

1 in order to come up with what we think the
2 central dose estimate is for this individual and
3 to bound the uncertainty associated with it.

4 In walking through this slide here with you,
5 if you look at the top line only, what you have
6 is that initial dosimeter dose distribution
7 multiplied by the dose conversion factor will
8 give you the organ dose from the dosimeter alone,
9 from the measurements on the dosimeter.

10 Within this dose distribution, multiplying
11 by the same dose conversion factor, you'll end up
12 with the missed organ dose.

13 The environmental dose distribution, you'll
14 notice that the dose conversion factor is much
15 smaller from this case, and this is because, as
16 Dr. Ziemer pointed out, we're talking about
17 somebody immersed in a cloud, and so the exposure
18 geometry is isotropic. It's from all directions
19 at all times. Therefore the dose conversion
20 factor has a narrower uncertainty associated with
21 it.

22 And when you multiply those two together,
23 you get the environmental dose distribution. You
24 add these three together, and you end up with a
25 final bone marrow dose for this individual.

1 Now what I want to point out here on this is
2 in modern times, with quarterly monitoring using
3 TLDs at a detection limit of ten millirem, this
4 missed dose becomes relatively small. It's way
5 down here at the far end, with a maximum of about
6 40 millirem. In addition, the environmental
7 doses have also decreased over time because we
8 don't emit things out of the stacks like they did
9 back in the 1950s during the green runs and that
10 kind of thing. So these two components right
11 here will greatly decrease in more current times.

12 What's interesting is as you see -- as you
13 look at a person's dosimeter dose information and
14 where there's one of these changes that occurred
15 from a missed dose, you'll see the missed dose
16 will decrease and the dosimeter dose will
17 increase, because we started measuring more of
18 what we missed. And so you can see that in
19 individuals' exposure histories.

20 So what we end up here is with the bone
21 marrow dose associated with this particular claim
22 or individual. Well, upon inspection you can
23 generally see that it tends to follow kind of a
24 lognormal type of a distribution, which is
25 dominating by this missed dose being so large.

1 However, if these two were small, you would see
2 it's probably going to follow more of a normal
3 distribution.

4 And so we need to have some kind of a test
5 in order to determine which -- is it more
6 normally distributed or more lognormally
7 distributed. So what we're proposing is to use a
8 goodness-of-fit test for normality. What I've
9 chosen to use here is the Chi-square goodness of
10 fit. And what this will tell us is what's the
11 tendency of that particular distribution, because
12 in IREP we have to pick one. You have to put in
13 one type of distribution and assess the
14 parameters associated with it. What you can see
15 from the Chi-square goodness-of-fit test, the --
16 it follows more of a lognormal distribution with
17 a geometric mean of 754 millirem with a geometric
18 standard deviation of 1.28.

19 I want to talk about the geometric standard
20 deviation a little bit here, because I've had
21 some questions from other colleagues who have
22 been plugging in some different geometric
23 standard deviations for different doses and
24 coming up with some really interesting answers
25 coming out of IREP. And part of that is because

1 of the -- if you plug in like a geometric
2 standard deviation of five, well, you're going to
3 have a huge uncertainty associated with the
4 particular dose.

5 What you'll see here is the geometric
6 standard deviation of 1.2 is really too tight for
7 the distribution; 1.25 is pretty close, the
8 actual calculated value was 1.28; 1.5 is
9 spreading out the data too much, as well as 2.0.
10 So in going through this process of Monte Carlo
11 sampling, we can actually come up with what the
12 geometric mean is and the actual geometric
13 standard deviation. It can be calculated, and
14 that's what we're proposing.

15 So now that we've got this distribution, we
16 know the exposure year, the rate of exposure, the
17 radiation type. The example I just took you
18 though is photons greater than 200 keV.
19 Lognormal distribution, the median being .754
20 centisieverts, the geometric standard deviation
21 of 1.28, and that is the dose input for one
22 photon energy for one exposure year.

23 You go through this entire process and
24 repeat this process for each radiation type, each
25 energy, and each exposure year. If somebody was

1 exposed to three of the three different energies
2 of photons and four different neutron energies,
3 that would be seven for each exposure year. If
4 they were at the site for ten years, that would
5 be 70 of these distributions to be developed to
6 enter the data into IREP.

7 And with that, I'll answer any questions you
8 have.

9 **DR. ZIEMER:** Thank you, Tim. We obviously
10 had a number of questions as we proceeded, but
11 what about additional questions now? Comment?

12 **MR. ELLIOTT:** While you're all thinking of
13 your questions, I would like to give you a little
14 bit of insight into how we come to be at this
15 point with our knowledge and understanding, and
16 what we're proposing here in dose reconstruction
17 as a process.

18 What information besides the individual dose
19 badge results, bioassay results that we talked
20 about earlier, what information exists beyond
21 those at the sites?

22 This is a little book; it's titled *Los*
23 *Alamos Handbook of Radiation Monitoring*. It was
24 given to me yesterday. We know that these kind
25 of documents exist, have been prepared and

1 distributed across the DOE complex. This is a
2 1958 third edition of this book. This book has
3 set some benchmarks for us in understanding this
4 time era and what the technology was capable of
5 doing for this time frame. Feel free to pick
6 this up and look at it. I ask you not to walk
7 away with it, and it is fragile.

8 But it has information in here that is
9 relevant to what Tim has just presented to you.
10 It gives us an understanding of what the limits
11 of detection were for certain pieces of
12 monitoring equipment in use in this time frame
13 for this site. And we know from our experience
14 in research on these sites that Los Alamos --
15 what was used at Los Alamos was adopted at other
16 sites. What was developed at Oak Ridge was
17 adopted at other sites. What Hanford had in
18 place, they put in place from their own
19 experience and technological advances, as well as
20 those that were done at Los Alamos and Oak Ridge.

21 The medical diagnostic X-ray information is
22 listed in this book for this time frame, so we
23 have a source to go to. This is just an example
24 of the additional type of information we would go
25 back to DOE on certain types of claims and

1 requests. We would accrete this type of
2 information to use on future claims relevant to a
3 given site. So feel free to look at this as you
4 wish.

5 **DR. ZIEMER:** Tim, I have a question on
6 missed dose that relates to neutrons. You didn't
7 really cover it here, but it is in your paper.

8 We know that certainly in the early times
9 and to some extent even today there are certain
10 bands of neutrons not easily picked up by
11 dosimeters. You pointed out, for example, I
12 think, a case of knowing the thermal dose and
13 knowing perhaps the fast neutron and some band
14 maybe below 500 kilovolts or so that would be
15 missed. However, that's not new information. I
16 think the people at the time knew that they were
17 missing part of the band, and many -- I think in
18 many cases had algorithms that, based on what
19 their source terms were, that corrected for that
20 in the dose record.

21 I assume that you're not automatically going
22 to say that a dose was missed simply because of
23 some certain type of monitoring used, or you'll
24 use information like this, I guess. I'll answer
25 my own question, I suppose. But maybe you can

1 clarify that issue on particularly missed neutron
2 dose.

3 **MR. TAULBEE:** That is absolutely correct.
4 There were some sites that did have algorithms
5 that were used, and we knew what neutron sources
6 they were using at the time period and how they
7 went about in doing their calibrations. We also
8 know that at other, some other facilities they
9 weren't quite that sophisticated at that time
10 period, and so there'd be a window of five or six
11 years where they weren't accounting for it.

12 But we do go back and we look at what their
13 calibration procedures were for the particular
14 site at the particular time period in order to
15 determine whether or not we need to make this
16 additional correction that's discussed there in
17 the external guideline.

18 **DR. ZIEMER:** Jim.

19 **DR. MELIUS:** Can you give me an idea for the
20 example you presented here today how much person
21 time is involved in doing this calculation?

22 **MR. TAULBEE:** There's a lot of -- I won't
23 say a lot -- there's some development time in
24 setting up your spreadsheets in order to do this.
25 The program, the Monte Carlo sampling program

1 that I used, was Crystal Ball, which is -- it
2 runs on a PC in an Excel type of format.
3 Plugging in the data takes some considerable time
4 to get there, probably a day or so to get
5 everything all set up. But then the actual
6 calculation when you run through it takes the
7 computer five, ten minutes. So the front-end
8 part is what takes the longest time period.

9 **DR. MELIUS:** So just so I -- for this
10 example, that would take some technical person a
11 day's worth of work to do this, or how would this
12 -- I'm trying to think how this process works, or
13 will work with your contractor and so forth.
14 What will be involved? Who will be doing what
15 and so forth?

16 **MR. TAULBEE:** Well, it doesn't take a full
17 day to enter all of this data at all, but in
18 order to enter probably 10 years or 20 years, or
19 10, probably 15 years of data, it could take you
20 a full day in order to get up to that. So it
21 really is dependent upon how long the work
22 history was for the individual and how complex it
23 is in order to come up with these calculations.

24 **DR. NETON:** If I could just elaborate on
25 that a little bit, though, there is a lot of

1 detective work that goes into the up-front aspect
2 of this, which is what were the detection limits,
3 the medical X-rays, what type, what kVp or mAs
4 settings, that type of thing.

5 So I think in the very beginning the dose
6 reconstructions are going to move slower because
7 we're setting the baseline for a lot of these
8 facilities. Once that's in place, then I think
9 what Tim is saying is true; then it's a matter of
10 setting up your spreadsheets and running through.
11 But for some of these smaller facilities we don't
12 know maybe about the -- finding out what the
13 exchange frequency was might even be difficult.

14 So there's a lot of front-end detective work
15 that I don't think we can say right up front that
16 it's going to take one day per dose
17 reconstruction. I think in the very beginning
18 it'll go slower, and then efficiency will take
19 over as time progresses.

20 **DR. ZIEMER:** Tim, I'm going to make a
21 comment here, maybe for you and Larry.

22 Some of you know I retired recently, and I
23 was going through documents and tossing out stuff
24 like this (indicating) into my wastebasket. And
25 then I had this sudden flash in my mind, and I

1 got on the phone and called Paul Frame at Oak
2 Ridge, who's a kind of a curator of old
3 instruments and documents, and I described for
4 Paul what I had. I said, Paul, I just filled up
5 a wastebasket with these old documents. He said,
6 oh, send them to me, so I filled up boxes and
7 sent them to Paul.

8 But it may be that if you're looking for
9 things like this (indicating) -- and Paul
10 probably has my copy of that Los Alamos one right
11 now -- but that would be a good source of old
12 documents from the DOE/AEC system, Paul Frame,
13 Oak Ridge National Lab. Or is it ORAU? ORAU,
14 yes.

15 **MR. TAULBEE:** Thank you very much, because I
16 don't know why, but many of the documents that
17 I've obtained so far have been from DOE public
18 reading rooms. And I know of Paul Frame, and I
19 know of his experience with historical monitoring
20 information, and I never really made that
21 connection. So thank you.

22 **DR. ZIEMER:** He may not appreciate my
23 volunteering his documents, but I think he does
24 want them to be useful to people, and more like
25 an archival library that might be helpful.

1 Other questions? Okay, Wanda, please.

2 **MS. MUNN:** One other similar kind of comment
3 -- and again, I don't doubt that he'd appreciate
4 my commenting on this -- but I'm assuming that
5 you have checked with Ron Catherine (phonetic).
6 He also is a great collector of this type of
7 thing, and probably has several hundred boxes
8 stored in his basement somewhere.

9 **MR. TAULBEE:** Okay, thank you.

10 **DR. ZIEMER:** Yes, Ron Catherine's wife would
11 like you to get most of Ron's documents out of --
12 you probably shouldn't put that in the record.

13 (Laughter)

14 **DR. ZIEMER:** Other comments or questions?

15 (No response)

16 **DR. ZIEMER:** If not, we're going to adjourn.
17 Our experience last time indicated that sometimes
18 an hour for lunch pushes us a little. There's no
19 formal arrangement made for the lunch hour;
20 everybody's on their own. Last time we had a
21 list of eating places.

22 Cori, do we still have a list somewhere for
23 -- it's out on the table or back here. So we'll
24 reconvene about 1:00 o'clock.

25 (Whereupon, a luncheon recess was

1 taken from 11:40 a.m. to 1:10 p.m.)

2 - - -

3 **DR. ZIEMER:** We are ready to reconvene the
4 afternoon session. I'd like to remind members of
5 the public if you wish to make a public statement
6 later in the agenda, please sign up in the
7 booklet out in the foyer so that we can allot the
8 time accordingly.

9 I'd like to call on Larry Elliott briefly.
10 Larry, would you give us a, particularly for the
11 members of the public, an update on the comment
12 period for 42 CFR 82?

13 **MR. ELLIOTT:** Yes, Dr. Ziemer.

14 Just so that everyone knows and for the
15 record, the public comment period and the
16 opportunity for the Board to get its comments in
17 on the guidelines for determining methods for
18 dose reconstruction, 42 CFR 82, are open again
19 during this meeting, and that comment period will
20 close March 1st for the public to provide any
21 further comments that they have. So March 1st
22 would be the deadline for the public to provide
23 written comments beyond this meeting.

24 **DR. ZIEMER:** Thank you.

25 We'll begin the afternoon session with

1 presentation on internal dose reconstruction, and
2 that will be given by Dave Allen, who's on the
3 NIOSH staff. Dave.

4 **MR. ELLIOTT:** As Dave's taking the podium,
5 if you look in your briefing book and you don't
6 find this presentation let us know, because we
7 just found that one member didn't have a copy of
8 it. So -- you don't have a copy, Rich?

9 **MR. ESPINOSA:** I've got a copy.

10 **MR. ELLIOTT:** Okay.

11 I'm sorry; go ahead, Dave.

12 **MR. ALLEN:** No problem, Larry.

13 Afternoon. My name, as the slide says, is
14 Dave Allen, and I'm here to talk to you about
15 internal dosimetry. Obviously there's no way I
16 can cover in great detail the entire
17 implementation plan in one afternoon, but I
18 wanted to try to touch on a couple of key points.

19 This slide is -- you've seen it before, once
20 last time -- and just as a little refresher, this
21 is the types of information we can use for trying
22 to reconstruct internal dosimetry. Bioassay
23 data, which is basically a direct measurement or
24 directly related to the actual intake a person
25 received; in-vivo is often referred to as a whole

1 body counter. It's a way of counting the -- it's
2 assessing the amount of material in a particular
3 organ or in the entire body. The other ones you
4 see under bioassay are simply ways of measuring
5 concentration in different excreta to try to
6 assess how much uptake of a radioisotope a person
7 received.

8 Incident reports are on there simply because
9 they give you a lot of information. Obviously
10 there won't be an incident report every time for
11 every dose reconstruction we do, but they do tell
12 you all the upset conditions, if you can find
13 them. Upset conditions are very important
14 because a lot of the internal dosimetry is going
15 to rely on averages, so to speak. Anytime we
16 don't have the bioassay data we have to rely on
17 air sample data. A lot of times we're going to
18 be relying on the typical amount of work time a
19 person's in an area, or the typical air sample
20 concentration in that area. So upset conditions
21 are important for that assessment to get it
22 accurate.

23 And air sample data, like I just mentioned,
24 it's somewhat of an indirect way of estimating
25 the intake a person received.

1 **DR. ZIEMER:** Dave, if I could interrupt.
2 Are you agreeable to allowing questions as you
3 proceed --

4 **MR. ALLEN:** Sure.

5 **DR. ZIEMER:** -- on this. And if you are,
6 let me insert one at this point, or maybe two.

7 On bioassay data, you hadn't listed the
8 possibility of activated blood. There are cases
9 where certain -- well, criticality doses, that's
10 another -- or actually not just blood, but other
11 body samples activated. And then also things
12 like nose swabs.

13 **MR. ALLEN:** These were -- that slide was
14 intended for some examples of the type of
15 information. We can, of course, use a whole
16 myriad of information, and we intend to use
17 whatever we can find for the most part.

18 Blood activation, like you said, that's -- I
19 think I'm being told to step closer to the
20 microphone. Blood activation from criticality,
21 that's more external for the most part. You do
22 get some activated blood, but that's as a result
23 of a massive external. But yes, like you say, we
24 can go ahead and assess the various elements that
25 were activated, and how much dose he's continuing

1 to get from that, et cetera.

2 **DR. ZIEMER:** Yes, it's true that it is
3 external exposure; but it is, in a sense, a sort
4 of bioassay.

5 **MR. ALLEN:** Yeah, it's kind of a bioassay
6 for an external program. In fact, we were
7 looking at a paper recently on that.

8 To move on, bioassay is what we intend to
9 use primarily for the internal dosimetry. There
10 are several reasons why -- we will use a myriad
11 of information. We will try to use all the
12 information we can get our hands on. But
13 bioassay's got to be considered the primary
14 resource.

15 The reasons for this I've tried to list up
16 here. The data is directly related to an
17 individual. Any other type of, like, say, air
18 sample concentration for inhalation exposure, you
19 have -- air samples are generally related to an
20 area. And somehow you have to then relate that
21 person to that area and for that time frame.

22 Also, the air samples inherently are
23 averaging over some period of time, such as an
24 eight-hour air sample is going to find an average
25 concentration for that time. If the person's in

1 there for an hour, often he's -- the people are
2 doing the work and they are causing the airborne.
3 So that average concentration isn't necessarily
4 the greatest concentration to use.

5 So preferably we'd be using bioassay. It's
6 more directly related to what the person
7 received.

8 I think I just basically covered the first
9 two on that one. And the last one, the data is
10 likely to be more retrievable. Air sample data,
11 contamination survey data, that sort of stuff was
12 typically considered project data, and it may or
13 may not exist after a project ends or a piece of
14 equipment is decommissioned. Sometimes that data
15 was not archived decades ago.

16 Bioassay data, on the other hand, it was
17 typically considered dosimetry data. It was
18 normally kept in a file with that person's name
19 on it, and is usually archived even after the
20 employment. We still expect to have some
21 problems getting some of this bioassay data, but
22 it's most likely we're going to get the best
23 handle on.

24 **DR. DeHART:** Help me understand -- this is
25 Roy DeHart -- help me understand. The half-life

1 of a urine sample, for example, where there has -
2 - I can understand it when there's been a point
3 exposure. And the half-life I'm talking about is
4 not radioactive half-life; I'm talking about the
5 excretion half-life of whatever the salt or
6 mineral happens to be. I can understand it with
7 point. But if you're trying to monitor over
8 time, how do you consider that?

9 **MR. ALLEN:** Well, the way we do that is by
10 -- we use the same model that we're going to
11 determine the dose for the individual tissues.
12 This is the ICRP general biokinetic model, and it
13 describes different routes of entry and different
14 routes of elimination, and also the transport of
15 a particular radioisotope within the body. It
16 gives various rates for the individual organs to
17 absorb and to remove the various elements.

18 Using this model, you can see where down at
19 the bottom you can determine at a particular
20 point in time how much of that radioisotope is
21 coming out in the urine or in other excreta.
22 What you get if you, say, get one quick
23 inhalation of some amount of plutonium, say, for
24 example, you would get a curve. If you were to
25 monitor the, say, urine, and check the

1 concentration from day after day after day, you
2 would end up getting a curve similar to what you
3 were just talking about, some sort of decay type
4 of curve, which would look like that
5 (indicating).

6 This one is an example. It's a typical
7 excretion curve, and this is for an acute
8 inhalation of insoluble plutonium. You can see
9 the time scale on the bottom is days after the
10 intake, and it does, believe it or not, go
11 through all that system and start coming out in
12 the urine very quickly after the intake.

13 **DR. DeHART:** I understand that for a point
14 exposure, a point in time. But are you using it
15 for monitoring over a period, over a length of
16 time when you don't know when the dose occurred,
17 and then try to use this to extrapolate back, or
18 -

19 **MR. ALLEN:** When we don't know when the
20 intake occurred?

21 **DR. DeHART:** Yes.

22 **MR. ALLEN:** Yeah.

23 **MR. ELLIOTT:** Did you guys work together -
24 (Laughter)

25 **DR. ZIEMER:** And could I insert in here,

1 too, Roy, I think in principle for a sort of a
2 chronic case, you could assign -- if you go back
3 to the model, you could assign a rate of intake.
4 You could -- just like the excretion rate, you
5 could have, let's say, a constant intake rate,
6 and you could even have a model where you reached
7 equilibrium in some organ where the intake and --
8 so I think they can model it mathematically with
9 probably differential equations would do it if
10 you had the ideal case. Now obviously you're up
11 and down even in the chronic cases for different
12 inputs. But in principle, you can do that
13 mathematically.

14 **MR. ALLEN:** Yeah. I'm going to have some
15 more slides there, too.

16 As you were mentioning, this one shows one
17 bioassay point -- if I can remember where the
18 pointer is on there -- that little dot right
19 there is one bioassay. Once you get this sample,
20 you get a detectable amount of plutonium in this
21 example, you still don't know how much intake an
22 individual received. Even if you know the type
23 of plutonium material and that it was an
24 inhalation, you still don't know how much.

25 The important parameter, as you were

1 alluding to there, is the date. In this example,
2 that bioassay sample could correlate to a 1.3
3 picocurie intake inhalation, if it were to occur
4 two days prior to the sample. But it can be as
5 much as a 10 picocurie intake if it was 30 days
6 prior. That's almost a factor of ten. That's a
7 pretty large difference. So a lot of internal
8 dosimetry is ways to narrow down exactly what
9 that date was.

10 That's another reason the incidence reports
11 I was talking about earlier are very important.
12 They can zero in on the date right away. Also, a
13 lot of samples are taken as a result of an
14 incident, so you have some sort of information
15 that this is a non-routine sample. It was
16 probably taken the day of or day after an
17 incident.

18 One of those tricks -- well, for lack of any
19 other information, if we have nothing else we can
20 go on, on a routine sample like this -- like, for
21 example, if this was a 30-day sample frequency,
22 we would pick the midpoint, is the standard
23 philosophy. So on a 30-day frequency we would
24 pick the 15-day point. It's not necessarily the
25 most conservative, but you can see even at 15

1 days it's fairly close to the most conservative.
2 If the intake occurred near that bioassay, we
3 would be overestimating by quite a bit.

4 Another method we have for trying to narrow
5 down that date with limited information -- this
6 looks like the same slide, but this is what
7 happens after an incident. Often you'll get
8 follow-up samples, or even any positive bioassay
9 sample, a lot of times you will get follow-up
10 samples.

11 In this example I'm showing two additional
12 samples on here, and you can see even though this
13 is a nice and pretty theoretical curve here, but
14 you can see on this example how it would follow
15 that curve down. These three samples, following
16 that curve, you could line them up and say this
17 must be an inhalation that took place two days
18 prior to that first sample, so that correlates to
19 that 1.3 picocurie intake.

20 If the backup or the follow-up samples ended
21 up being pretty much the same level, you'd be on
22 this straight line here. You wouldn't
23 necessarily be able to tell the difference
24 between that 15-day exposure and that 30-day
25 exposure, but you would be zeroing in on the,

1 say, nine to ten picoCurie intake range rather
2 than the one picoCurie intake range. So it might
3 not be a perfect way of doing it, but it will
4 zero you in on getting it close.

5 Now that was a nice, pretty, one acute
6 inhalation. This type of thing I've actually
7 seen. This is a theoretical example here, but
8 there is plenty of examples out there in real
9 life where it's not one nice, clean intake. It's
10 multiple intakes.

11 What I want to do is run you through this
12 example to show you what would happen in that
13 case. The reason this is a theoretical example
14 is this way I can show you what it really is. In
15 real life we would estimate it. We would know
16 we're pretty close, but there's no way we'd know
17 exactly what happened.

18 So what I've done here is I've picked some
19 random dates somewhat and some random intakes,
20 and I calculated out what the bioassay samples
21 would be on a routine frequency. And this is the
22 result there. These are bioassay samples on
23 particular dates. Then from that, the analyst
24 would not know this information here. I wanted
25 to show you how he can actually come up with

1 something relatively close.

2 Now here it's partially done. Obviously
3 it's not completely done. The purple curve is
4 the estimate, what the analyst would be
5 predicting to be bioassay from the intakes that
6 he estimated. On the first sample, with nothing
7 more to go on, I ended up picking the midpoint,
8 and from that midpoint I ended up picking 10,000
9 picoCurie intake, which turned out to be just
10 exactly what reality was. But again, the analyst
11 would have no way of knowing that.

12 Since that intake was off a couple weeks,
13 that air kind of starts promulgating it to a
14 point. The next intake I picked was April 1st,
15 and in reality we know that it was the end of
16 February. That's off by a month. I still ended
17 up with the same amount, but after that things
18 start getting a little bit off. When I'm to this
19 point here, I've got five intakes estimated. We
20 know for real there was five intakes. But in
21 reality, the analyst knows he's not done at this
22 point. He's going to assume there's another
23 intake that occurred at this point in here
24 somewhere; had to be.

25 So when he's all said and done, he ends up

1 adding a couple more intakes. This large intake
2 here is the 15,000 picocuries you see, and that
3 ended up giving me a line that was a little bit
4 below here. When I added one more smaller intake
5 on this date, it brought it up to where it looks
6 like I have a scenario here that it seems like it
7 should be right. We know, because it's
8 theoretical, that it's not exactly right. The
9 scenario's off quite a bit on dates and on
10 numbers.

11 The key number, though, the important part
12 here, is that total. What I've basically done is
13 showed that there's two scenarios that could give
14 you the same bioassay, can predict the same
15 bioassay points, but they do give you the same
16 total inhalation intake. The scenario might not
17 be right, but the total should be relatively
18 close.

19 Another example on this, even if you knew
20 the exact dates of intake -- say the person only
21 went into an area at least five times. You know
22 the exact dates, you know when he had to have
23 these intakes. But say for some reason you've
24 messed up on the highest one here, and you call
25 it zero. Instead of 25,000 we know it is, he

1 thinks it's zero. You still, in order to match
2 these data points here, he had to overestimate
3 those, not realizing it of course, but his
4 estimate here is considerably higher than what
5 reality was. Again we end up with the same total
6 intake.

7 Now this is obviously not going to happen.
8 Nobody's going to think that this is a good match
9 on this area of the curve right here. But
10 sometimes sample data is missing. Sometimes
11 samples get missed or routines get missed, or we
12 get a flawed sample. This graph here indicates
13 that even with a flawed sample or even with some
14 missing data, we can still reconstruct this
15 accurately.

16 Now the difference here, the effect it has
17 on dose, since this is an inhalation of some
18 insoluble compound, I figured the lung was
19 probably the biggest effect. What I've done
20 here, and I should have labeled it, is the annual
21 lung dose from -- this is for the actual case;
22 this is for what the analyst predicted
23 (indicating); and this is in rem, rem to the
24 lung.

25 You can see in 1979 they had the exact same

1 numbers. That's because my estimate was exactly
2 the same. 1980, you can see the numbers vary a
3 little bit. That's because this 25,000
4 picocuries that really occurred, we estimated as
5 happening two and a half to four months later.
6 Therefore the lungs, with this material in the
7 lungs, the lungs were not exposed as long;
8 therefore they got a little less dose that year.

9 When you look down at the following year,
10 the lungs haven't had as much time to clear it
11 out. So now, by our models, we think there is
12 more material in the lungs than actually is, so
13 we're assigning more dose to the lungs than there
14 really was. So being off -- and in following
15 years, if I were to carry this on out further,
16 the differences get smaller and smaller, and the
17 total would end up being equal.

18 So this shows even being off two and a half
19 to four months on this material, the difference
20 here is the biggest, and that's about a five
21 percent difference or so, give or take. So it's
22 still a reasonable estimate with limited
23 information, and in this particular case with a
24 couple samples missing.

25 Now somebody was mentioning earlier about

1 chronic exposures, essentially. Chronic
2 exposures just -- not every time is it an
3 incident, and not every time does somebody get
4 one big inhalation of some material. Sometimes
5 it's a routine operation that has some low air
6 sample activity and the person is inhaling a
7 small amount every day. That would be a chronic
8 type of exposure, and that does affect the curve
9 somewhat on this elimination curve.

10 You can see on this graph, the blue line is
11 the one that you saw earlier. This correlates to
12 a ten picoCurie inhalation of insoluble
13 plutonium. The purple curve here is also ten
14 picocuries of insoluble plutonium, but this time
15 it's he inhaled one picoCurie a day each day for
16 ten consecutive days. So you can see a classic
17 chronic type of curve on this, but you also have
18 to notice that once you get 20, 25, 30 days out,
19 the difference is almost non-existent in this
20 example.

21 You also have to realize that this is a
22 30-day period. Bioassay samples are seldom more
23 frequent than a 30-day period, so there's going
24 to be one sample attained in that period of time,
25 more than likely. If it's caught in this point,

1 we're going to either underestimate or
2 overestimate, depending on whether we think it's
3 a chronic or an acute exposure.

4 But as I showed in the other slides, it
5 tends to come back around. If we've
6 underestimated on this exposure, we're going to
7 underestimate the effect of that exposure on
8 other bioassay samples down the road. And then
9 we'll have to estimate higher intakes to account
10 for those, or additional intakes to account for
11 those.

12 The reason this comes out to be pretty close
13 after only 20, 30 days is, in all reality, a
14 chronic exposure is just a series of acute
15 exposures. Since we probably don't have data
16 points to associate with all those, it can make a
17 difference in what we reconstruct.

18 And I can show you that example here. What
19 I've done here is one more example or yet another
20 example, same type of thing as what I did before,
21 but this time the real dose is a chronic
22 exposure. So I took a -- I assumed a 1,000
23 picoCurie per day intake for 31 straight days, so
24 doing the math, that's 31,000 picoCurie intake.

25 Now without -- same story again, without the

1 analyst knowing that information, and he's going
2 to attempt to -- let's just assume that he
3 attempts to estimate this as an acute exposure,
4 or a series of acute exposures. It's pretty
5 clear when he looks at the data that something
6 happened in here, so he ends up taking a midpoint
7 and estimating a dose. When he takes the
8 midpoint between sample dates, it ends up doing
9 something like this. It overestimates the
10 bioassay samples down here, so he has to adjust
11 that date. He ends up adjusting the date up some
12 until some of these samples line up, like I
13 showed you in the one previous graph.

14 So I ended up choosing June 7th, and that
15 equated to a 28,000 picoCurie intake. That gets
16 you relatively close there, but obviously not all
17 the way there. What happens at that point is
18 then this curve is actually down below here, and
19 the analyst would have to either rethink it and
20 think it's a chronic exposure, or he's going to
21 have to assume there's some additional acute
22 exposures.

23 In this case, trying to estimate this as a
24 series of acute, you can see what the values are
25 I ended up estimating. Much smaller than that

1 initial one, but they all tend to continue to add
2 up to where I ended with a total of around 30,000
3 picoCurie intake.

4 So the 30,000 picoCurie intake compared to
5 the real intake of 31,000, it's 3-point-something
6 percent difference, less than a five percent
7 difference. And you have to remember, that's
8 without even trying to model it as a chronic,
9 without any other information, just simply
10 putting a series of acute intakes to try to mesh
11 the data.

12 Okay, I'm going to shift gears just slightly
13 here. It seems like it's a big shift, but it's
14 not. I want to talk about missed dose a little
15 bit. Missed dose, if you remember, is just a
16 person could receive a very small amount of
17 inhalation exposure and not submit a detectable
18 bioassay sample. It may not be enough to reach
19 the detection limits of the equipment. So the
20 question is how are we going to deal with that?
21 How are we going to add this back in?

22 I wanted to -- with the external dosimetry
23 you know detection limits for equipment, et
24 cetera, that once the badge is exchanged that is
25 gone. It's not true with internal dosimetry. As

1 the other examples already showed you, once you
2 get an intake it's going to affect the bioassay
3 sample for quite some time. So this missed dose
4 does affect what happens after the fact. That's
5 the correlation effect I'm talking about on that
6 slide, must be correlated with subsequent
7 samples.

8 So I'm going to run through another example.
9 I'm going to take the previous example of the
10 chronic exposure. This time I'm going to assume
11 there's a detection limit of .022 picocuries -
12 not that that's a real number; it just worked
13 well on my slides. This time I'm going to assume
14 there was a missed dose, a missed chronic
15 exposure of 152 days consecutively, 87 picocuries
16 per day.

17 It sounds like an odd number, I know, but
18 the reason I picked that number is that gets you
19 just below this detection limit on some of those
20 previous samples that we called zero. So that's
21 about maxed out in this case for that time frame.
22 And it doesn't end up, even though that seems
23 like a smaller number, it doesn't end up being
24 small. That adds 13,000 picocuries to what was a
25 31,000 picoCurie intake. So it's not a small

1 difference, and that would be a significant
2 amount of missed dose if it actually were missed.

3 What I want to show you or what I want to
4 point out, like I said, is the bioassay samples
5 that come after that fact have to change. With
6 that amount of intake, that has to affect the
7 concentration in the urine after the fact. What
8 I wanted to point out is what would happen if the
9 analyst didn't consider the missed dose in this
10 example.

11 This was the previous prediction
12 superimposed over the new bioassay samples I've
13 calculated out. And obviously the analyst would
14 not have thought this was a good fit. These four
15 right here are the missed dose that I was talking
16 about. I put them on there simply to show you
17 where they are, but we're going to assume that
18 they're just recorded as less than minimum
19 detectable activity. So as far as we're
20 concerned, it's a zero there.

21 This obviously is much better fit. This is
22 what happens when he's taking this bioassay
23 sample, he's ignoring missed dose, and he's
24 trying to estimate this chronic exposure as a
25 series of acute exposures. With all those

1 mistakes in mind, he comes up with a new estimate
2 of 41,000 picocuries. And we know -- he doesn't
3 know, but we know the real intake was 44,000,
4 which is approximately a seven percent
5 difference. Still not the end of the world.

6 With little effort and without trying very
7 hard, making lots of mistakes, we're talking a
8 seven percent difference here in this example,
9 which is essentially what that says. And
10 remember, that missed dose, that 13,000, which
11 was not a small amount, there was no indications
12 that it ever existed. It was just recorded as
13 less than minimum detectable activity.

14 And again, that's because adding the missed
15 dose will -- if you were to go back now at this
16 point and try to add in some missed dose in the
17 beginning, you have to recalculate your predicted
18 bioassay samples that happen after that. If you
19 were to take that example, go back and try to
20 calculate some missed dose in the beginning, add
21 it to that, you're going to have to lower the
22 estimates on those acute exposures that you
23 estimated.

24 What it ends up happening, because I went
25 back and did that -- I'm not going to show you

1 yet another graph of it, but I went back and did
2 that, and what I got was a five and a half
3 percent error instead of a seven percent error.
4 That shows you the difference in trying to
5 account for that missed dose or not account for
6 it. It didn't make a lot of difference. The big
7 difference here that the five or seven percent,
8 most of that is trying to estimate that long
9 acute or long chronic exposure as a bunch of
10 acute exposures.

11 So what it comes down to is if you have a
12 series of positive bioassay samples that you have
13 good readings on, if you account for the missed
14 dose or don't, it's not going to make a whole lot
15 of difference. We intend to go back and do the
16 best we can and try to estimate some of that, but
17 it very well could end up -- with other
18 information it could show us that there probably
19 was no missed dose, and if that's the case we'll
20 drop that value down. We'll be able to tell if
21 there was some missed dose or not once we have a
22 series of positive bioassay samples.

23 This graph shows you the other end of the
24 spectrum there. This is the same thing, just
25 stretched out over a longer time period. Once

1 you've gotten a series of positive bioassay
2 samples, like I said, it's going to affect the
3 bioassay for some time to come. And I've got to
4 point out, this straight line is -- yes, it's far
5 too straight; that's wrong. This line actually
6 should be down around in here (indicating). It
7 should have curved on down.

8 But it does show you that it's well above
9 the detection limit for -- this is somewhat like
10 a 15-year time span in this example. So what
11 this indicates is once you have a series of
12 positive bioassay samples, it's very likely you,
13 by definition, don't have any missed dose after
14 that.

15 If you already accounted for enough intake
16 to give you detectable concentrations for years
17 to come, you can't have missed dose. You could
18 have a small intake that's lost in variations.
19 That's a matter of uncertainty, but it's not a
20 matter of missed dose at that point, which is
21 essentially all that slide is reiterating.

22 So as I said, these are examples of somewhat
23 trying to be careless. I was trying to be
24 careless and come up with the wrong answer, and
25 it was somewhat difficult once you got some data.

1 So even though this seems like it's very
2 difficult, you can see where the data's very
3 important on a single intake. Once you get a
4 series of detectable samples, it really does end
5 up giving you the right total intake. You can
6 come up with that. You can determine the amount
7 on the missed dose, or at least account for it,
8 anyway. It's not as sensitive as you would think
9 at first glance.

10 That's essentially all I have for you,
11 unless you -- anybody have any comments?

12 **DR. ZIEMER:** Thank you, Dave. We probably
13 have a number of questions.

14 Let me begin with one, and this may have
15 been addressed last time we met; I don't recall.
16 If you have a long-lived material -- that is
17 long-lived in the body -- such as plutonium, are
18 you truncating the dose calculation so that you
19 don't count numbers that are close to the time of
20 the identity of the cancer -- that is, dose that
21 because of time delays could not have contributed
22 to the tumor?

23 **MR. ALLEN:** No. We are calculating annual
24 dose to the tissue from the day he got an intake
25 until the day of diagnosis. IREP accounts --

1 **DR. ZIEMER:** But the -- okay. I guess --

2 **MR. ALLEN:** IREP accounts for latency
3 periods, et cetera, so it'll essentially be -- if
4 it's a 20-year time span, he got 20 different
5 doses to, say, the liver and then he got liver
6 cancer, IREP will account for 20 different doses
7 and 20 different latency periods and essentially
8 sum all that up. So it give you --

9 **DR. ZIEMER:** Okay, it looks at each latency
10 period, though, so the dose -- the year prior to
11 the diagnosis will have, depending on latency
12 period, maybe no effect, then, on the --

13 **MR. ALLEN:** Right. It'll be accounted for,
14 but --

15 **DR. ZIEMER:** Accounted for, but then -

16 **MR. ALLEN:** -- there should be virtually no
17 probability from that.

18 **DR. ZIEMER:** Yes, got you. The weighting
19 factor will cover it. Thank you.

20 Now, Jim, did you have a question? Other
21 questions? Yes, Jim.

22 **DR. MELIUS:** And I apologize if I missed a
23 little bit of this, this has already been
24 answered.

25 I'm, I guess, trying to figure out where

1 some of this information's coming from, and
2 clearly this is going to be a difficult area to
3 piece together all the information on. As part
4 of your MOU with DOE, are you going to be
5 routinely asking for incident reports, or how is
6 that going to -- process -- or are you going to
7 wait until an individual reports it during an
8 interview? How are you going -- what's the
9 process? Is it a general request? Is it a
10 request at the time you are interviewing the
11 individual? Is it before that? How -- what's
12 that --

13 **MR. ELLIOTT:** It comes -- when we go after
14 incident reports, will come after the interview
15 has been done, after we've gained the information
16 from DOE, we've seen what kind of bioassay sample
17 results they have. Then we have the interview.
18 We augment that DOE information with the
19 interview information and any affidavits we might
20 have collected through the interview. Then we
21 go back to DOE and we say there appears to have
22 been some instance here where this individual
23 claims to have had an intake. We don't have
24 bioassay results to show that, perhaps, but we
25 need to see incident reports that might reflect

1 that. So that's when we would go after it.

2 **DR. MELIUS:** Okay. And then what happens if
3 you get an incident report without any monitoring
4 being done, or monitoring records are not
5 available? There may have been monitoring, they
6 may be missing, may not have been done. What's -
7 -

8 **MR. ALLEN:** Well, again, we're going to use
9 whatever we can get our hands on, and if there's
10 an incident report there'll be at least some
11 contamination surveys done. We can, if nothing
12 else, we can take that and estimate an airborne
13 concentration for that particular intake.

14 **DR. NETON:** This is Jim Neton.

15 I'd just like to expand a little bit on what
16 Larry was saying. What Larry said is true; we're
17 getting incident reports after we see some
18 evidence that there possibly was an incident.
19 But if -- I know some sites have the incident
20 reports in the person's own bioassay records and
21 files. And to the extent that they're in there,
22 we're certainly going to welcome them if they
23 come along with the case in the very beginning,
24 because it'll make our job a lot easier. But if
25 they do have to go back and dig, and these

1 incident reports are buried somewhere like in the
2 medical records or some archived files, that
3 would be the path we would take later, then, is
4 to go back and try to retrieve them at that time.

5 **DR. MELIUS:** Just two questions in terms of
6 follow-up. One is -- is this more like
7 procedural -- are you ever going to present to us
8 how you're going to handle missing data as
9 opposed to missing doses, what we've talked about
10 here?

11 **MR. ALLEN:** One of those slides mentioned,
12 if you remember, at one point it mentioned a
13 couple of data points missing, still came out to
14 where I got the right estimate, as long as I had
15 some information and it was detectable
16 information on bioassay.

17 **DR. MELIUS:** I guess I'm not as much
18 directed it at you, but a more general question,
19 because it seems -

20 **DR. NETON:** Yeah, I think what Dave
21 addressed here is -- and he mentioned at the
22 beginning of his talk that it's impossible to
23 cover the entire gamut in half an hour or
24 whatever was allotted.

25 But where they're missing data, of course

1 that's when we would go back and look at other
2 sources, which is covered, I think, in the
3 implementation guide, dealing with things such as
4 air sampling data to help ascertain the extent of
5 the level of contamination in the work place, co-
6 worker data, those sort of pieces of information.
7 And I think we've covered it in a general sense
8 to the best we could in the implementation guide.
9

10 But I don't think there's really any one set
11 formula that one can present for handling all the
12 different scenarios that might present
13 themselves. But we will use whatever's
14 available, whether it's air monitoring, breathing
15 zone air samples, co-worker data. And there are
16 some techniques out there for averaging adjacent
17 samples, those sort of things that we have
18 referenced. But I guess there's no one set
19 answer for that question.

20 **DR. MELIUS:** Yeah, and this is speaking, I
21 guess, personally -- I don't know how the rest of
22 the committee feels -- but it seems to me that
23 that's going to be something that's going to be a
24 controversial issue on an individual basis.
25 That's going to be something of concern.

1 And so your procedures for doing that, I
2 think, are going to be important. They may
3 actually be very important for an individual's
4 dose, but they may also sort of be
5 psychologically or personally more important to
6 the individual. They're going to be very
7 concerned about this. And I would certainly like
8 to hear a presentation on that issue at some
9 point, because I think we're going to, as a
10 Board, have to deal with those questions and how
11 you're doing that. So I think in the future we
12 ought to be talking about that.

13 The other question I have relates -- and
14 this may be getting a little bit off your talk,
15 but I think it came up, at least the thought
16 occurred to me during your talk -- was the whole
17 security issue. My recollection from my former
18 work when it involved DOE facilities, a lot of
19 these incident reports and so forth were
20 classified, probably because they occurred way in
21 the past and there were security issues and so
22 forth.

23 How are the security kinds of issues going
24 to be handled in terms of collecting information,
25 the interviews, what's presented to the -- what

1 can be presented to the individual when you're
2 mailing information to them and so forth?
3 Because again, it seems to me that's going to be
4 an issue of concern to the individual, and yet
5 there clearly are security issues that arise in
6 doing that. Have you worked out a process for
7 that? Is this part of what you're doing with DOE
8 now?

9 **MR. ELLIOTT:** This is part of the MOU that
10 we need to strike with DOE.

11 In our research experience and the MOU that
12 we had with DOE on that, we have a model to work
13 from, a starting point in that model. We have Q-
14 cleared staff who deal with classified
15 information of various types. Once we identify
16 from that information the relevant pieces that
17 are needed for whatever the work is, research, or
18 in this case compensation, we'd seek
19 declassification, or if that cannot be done, then
20 we seek a summary report that is declassified.

21 We have to work out with DOE how this
22 information is going to be held, because we have
23 -- in HHS we have no classified vaults, per se.
24 When we get to the point of appeals and final
25 adjudication process, that's a whole nother area

1 that we have to explore with DOE, on how a judge
2 can be brought into the understanding and
3 knowledge of classified information that has been
4 used to develop the case.

5 **DR. MELIUS:** I would just say I can see a
6 whole variety of -- where this is going to become
7 an important issue, and I'm glad you're pursuing
8 it.

9 **DR. ZIEMER:** Has there been any provision
10 either by NIOSH or DOE to consider taking
11 bioassay samples from individuals who may have
12 retired a number of years ago but for whom the
13 record indicates may have long-term body burdens,
14 and therefore, if the records are inadequate, get
15 some current bioassay samples?

16 **MR. ALLEN:** The only word I've heard on that
17 came from Jim Neton, so I'll let him --

18 **DR. NETON:** Yeah, we have thought about
19 that. There are some new bioassay techniques
20 such as thermal ionization mass spectrometry that
21 have detection limits an order of magnitude or so
22 below what's traditionally been used in the
23 workplace. In fact, I know out at Livermore
24 they're taking the old electrodeposited planchets
25 that were sometimes positive, sometimes not,

1 redissolving them, reanalyzing them, and getting
2 very nice clearance curve data for some of these
3 workers.

4 So we've thought about it, but we've not
5 really considered it as part of our routine
6 program. It is cost-prohibitive. Those samples
7 tend to run several thousands of dollars per
8 analysis. However, it may be possible to use
9 them in some sort of a verification role in our
10 process, where if we sense that there is no --
11 say a claim is awarded and we take a sample, we
12 could verify whether or not it makes -- do sort
13 of a sanity check on what we've been doing.
14 That's not been clearly defined in our process
15 yet, but we certainly have thought about it.

16 **DR. ZIEMER:** Thank you.

17 One question not related to that at all has
18 to do with the source term evaluations as a
19 method of determining body burdens when you have
20 to do that. You mentioned in your paper -- I
21 don't think you mentioned it here -- but in your
22 written paper the use of resuspension factors.
23 And I noticed -- the sentence says that if
24 limited information is known, conservative
25 default values for resuspension factors would be

1 used.

2 What are these conservative default factors?
3 Does somebody have some generally-accepted
4 resuspension factors? I know there are tables of
5 these that people have proposed for decades, but
6 does anybody know of --

7 **MR. ALLEN:** There is no right answer on that
8 one -

9 **DR. ZIEMER:** -- what might become the
10 agreed-upon default values?

11 **MR. ALLEN:** There is no right answer, of
12 course, on that one. But like you said, there
13 are tables out there. I would think if you were
14 stuck using something to that as a fact, you
15 would go to the tables and go to the research
16 that is associated with those tables and see what
17 applies or if they apply to your situation, and
18 get the best --

19 **DR. ZIEMER:** So a priori, there are no --

20 **MR. ALLEN:** No.

21 **DR. ZIEMER:** -- resuspension factors that
22 you have said, these we will use.

23 **MR. ALLEN:** No. That's why I said the
24 conservative resuspension -

25 **DR. ZIEMER:** It'll be on a pretty much an ad

1 hoc basis, that whatever seems to apply for a
2 given situation --

3 **MR. ALLEN:** Yes.

4 **DR. ZIEMER:** Right.

5 **DR. NETON:** We haven't committed to anything
6 on that line, but we have looked early on at the
7 use of values that are published in new Reg 1400,
8 which is the document that one would use to
9 determine if air sampling is required in the
10 workplace. And using those resuspension factors,
11 it starts with the old Allen Brodsky ten to the
12 minus sixth, and it is modified --

13 **DR. ZIEMER:** Right, the so-called magic
14 number --

15 **DR. NETON:** Magic number.

16 **DR. ZIEMER:** -- which is exactly what I was
17 leading toward.

18 **DR. NETON:** Exactly.

19 **DR. ZIEMER:** If all else fails, use the
20 Brodsky number.

21 **DR. NETON:** I'm not suggesting we're going
22 to use that, and if they have allowed for
23 modifications in 1400 to account for
24 dispersibility, confinement factors, those type
25 of things, whether it's a solid, liquid, gas, and

1 ventilation. But I think that would be hard to
2 defend in a general basis across the board,
3 although they may have some value in bracketing
4 the potential as very low or very high, again in
5 the efficiency process.

6 **DR. ZIEMER:** True enough. But if in fact
7 they are in, for example, in a new reg or
8 something like that, I think they're a little
9 easier to defend if there is any question about
10 what you use. It seems to me something like that
11 is a little more defensible than, say,
12 arbitrarily picking up a Brodsky number or
13 something like that.

14 **MR. ALLEN:** Yeah, that's why I put it down
15 as resuspension factors, not just an arbitrary
16 number. I mean, it would be some table, some
17 published values. I'm just not willing to
18 commit, because there's so many different
19 situations. It'd be up to the analyst to
20 determine what best fits, and what would be
21 conservative if there's that much uncertainty in
22 it.

23 **DR. ZIEMER:** Uh-huh.

24 **MR. ELLIOTT:** Let me make sure we're clear
25 on a couple points here.

1 You're quoting from the draft implementation
2 guide, and one of the editorial things that we'll
3 have to make -- take account here and make change
4 to this draft is how we define certain words.
5 And when we're talking -- when we use this word
6 "conservative," which I think is important for
7 everybody's understanding, we're talking that way
8 in regard to being -- giving benefit of the doubt
9 to the claimant, and so we're looking at worst-
10 case scenario. Those would be the things we
11 think of when we're saying conservative in this
12 approach.

13 **DR. ZIEMER:** Yes, I understand that. On the
14 other hand, I would not want the word
15 "conservative" to mean that as a worst case we
16 assume that all the material present gets
17 suspended, because that just does not happen. So
18 conservative might be taking a number of
19 published values for some nuclide under certain
20 circumstances and taking the most conservative of
21 those values, and that I could understand.

22 **MR. ALLEN:** Yeah, that's the intent of that
23 sentence.

24 **DR. ZIEMER:** Right.

25 **MR. ALLEN:** It was the conservative end or

1 the claimant end of the realm of possibility.

2 **DR. ZIEMER:** Right.

3 **MR. ALLEN:** Or the realm of reality.

4 **DR. ZIEMER:** Jim has a question.

5 **DR. MELIUS:** Yeah, somewhat along these
6 lines of conservative and dealing with this
7 issue, but you presented a series of examples,
8 and I think they're illustrative examples at the
9 level that I could understand.

10 Have you done a more formal analysis that
11 would look at the -- might be called a
12 sensitivity analysis or something to look at how
13 -- to try to put some parameters on when you have
14 to use certain assumptions or certain approaches?
15 And this sort of applied both here, but I think
16 more generally to this area where there's missing
17 information and so forth, that would let you
18 focus your efforts on certain types of data or
19 certain information and so forth?

20 I mean, it just -- examples are nice, but
21 they're sort of selected out of a wide array of
22 potential problems out there.

23 **MR. ALLEN:** I don't know if I fully
24 understand what you're asking, but as far as like
25 a sensitivity analysis, put some parameters, some

1 bounds on these.

2 You have to remember, too, and I know I
3 didn't make that clear, all those examples were
4 for insoluble plutonium. It'd be a totally
5 different example for a more soluble form of
6 plutonium or for an insoluble uranium, or --
7 there's so many possibilities out there. A lot
8 of the actinines (sic) will end up giving you a
9 long curve, a longer half-life essentially for
10 that, so that the topic will -- applies to a lot
11 of the type of materials we will see -- not all,
12 but a lot of them. But the values and the
13 sensitivity changes, so it's hard to put a hard
14 core number on anything.

15 **MR. ELLIOTT:** If you recall Jim Neton's
16 presentation earlier, he talked about we -- in my
17 comment, in my presentation, we're being
18 progressive with delivering information, and
19 amount of information and level of technical
20 detail information. We gave you the rule first.
21 Now we're talking about implementation guidelines
22 under that rule on dose reconstruction.

23 Jim also on his slide showed technical basis
24 documents, and that's where I think this comes in
25 from your question. We have to work on given

1 situations that are presented in cases to us,
2 working with our contractor to come up with a
3 technical basis on how we handle those things as
4 they present themselves, and then those are shown
5 to be established and used for the next case
6 coming along that is similar in nature and
7 situation.

8 **DR. MELIUS:** Just to elaborate, just -- I
9 guess what I'm trying to get also, are you doing
10 that, which is good, but also are you
11 prioritizing that effort so that your limited
12 resources are being spent on areas where it's
13 going to make the most impact in terms of cases?
14 And right, you're not going to know that until
15 you've gone through a number of cases, at least
16 not completely.

17 But it's going to be important. You can
18 spend a lot of time doing some of this work
19 technically, but it's not going to make much
20 difference in terms of what a person's dose or
21 where they're going to end up in terms of
22 probability of causation. And so are you going
23 to focus it in that way also, because that seems
24 to me what would be important, given the
25 limitations on resources.

1 **MR. ELLIOTT:** Yes, I -- very good comment,
2 suggestion; and we are. We're taking first
3 things first. And this is definitely on the
4 record now. That's something we plan to
5 incorporate as we move through, as cases are
6 presented and working with the contractor once
7 they're on board, to develop the technical basis
8 documents that serve as models for how future
9 cases are handled.

10 **DR. NETON:** One area I'd like to comment on
11 that I think we're looking at, and it's going to
12 pay off some large dividends, is how much effort
13 we put into refining the precision of these
14 estimates.

15 It turns out for some of the more uncertain
16 risk models, if you spend a lot of time reducing
17 the uncertainty of the internal dose estimate way
18 down, you've wasted your time because it
19 virtually doesn't change the risk -- the
20 probability of causation at all, because some of
21 the models have so much inherent uncertainty
22 built into them. And IREP has a nice feature
23 that one can run, and it apportions the
24 probability -- uncertainty to the different
25 factors.

1 And if you run some of the more uncertain
2 models -- I think probably bone cancer is one of
3 those -- you'll find that no matter what you do
4 to beat your brains out to get the uncertainty of
5 the internal dose down, it's all driven by the
6 uncertainty in the models. And we can use that
7 to our advantage and not waste time trying to
8 refine these uncertainty distributions below a
9 certain level. I think that area is very, going
10 to be very fruitful for us.

11 **DR. ROESSLER:** You might be touching on an
12 area that I have a question with, I guess, and
13 that's in your report, which you didn't address,
14 but the organs not included in the ICRP models,
15 and how you come up with dose to them. Once you
16 do, it seems like you're going to have a lot of
17 uncertainty associated with it.

18 And also, I'm thinking that these organs
19 might be some that a claimant might have cancer,
20 come in with the claim. These organs may very
21 well be some that are not associated very much
22 with radiation exposure, and on that case you
23 have a great deal of uncertainty. It just seems
24 -- and I haven't put it together mathematically -
25 - but it just seems like you have a real problem

1 with uncertainties here.

2 **MR. ALLEN:** There's a potential problem
3 there, yes. I have played with some of the
4 possibilities. And as Jim was saying, there's --
5 or as you mentioned, some of these organs are not
6 very radiosensitive, so there's not a lot of
7 information, and ICRP did not deal with them very
8 well.

9 The truth is, if they're not very
10 radiosensitive, the risk factors are usually --
11 should be somewhat higher. And as Jim pointed
12 out, sometimes they'll be compensated with the
13 uncertainty associated with the risk factor. And
14 the uncertainty associated with the dose almost
15 becomes irrelevant at that point. You can
16 calculate your best dose -- you're always going
17 to calculate the best estimate of what the dose
18 was, and if you go to the IREP program, you can
19 put in a large uncertainty for the dose or you
20 can put it in as a constant. If you find out on
21 both of those land on the same side of whether to
22 compensate or not, the uncertainty doesn't need
23 to be refined anymore.

24 **DR. NETON:** Yeah, but the bottom line, I
25 think, is that if an organ is not metabolically

1 involved in the metabolism of a radioelement,
2 such as the prostate gland for a plutonium
3 intake, the dose is going to be extremely small.
4 And I think the concept of using that upper
5 bounding estimate and applying it to that organ
6 will demonstrate that since it's not
7 metabolically active there's very low dose, and
8 we can deal with it that way.

9 Now the prostate is one of the 36 organs
10 that ICRP models. I think the original question
11 was what about organs that aren't even in those
12 36, in the ICRP models? And I think I touched on
13 it last time, is the concept at this point is to
14 take the highest non-metabolically involved organ
15 and assign that dose to that organ. So if you
16 take the metabolically-active ones -- for
17 plutonium would be liver, skeleton and lung, if
18 it was inhalation, and the gonads are one of the
19 sites -- and then take the next lowest one.

20 And what happens is that that would
21 essentially be the dose to the transfer
22 compartment, a partition among the volume of
23 blood that flows through that organ, and that
24 would be the dose assigned to the non-ICRP model.
25 Does that make sense?

1 **DR. ROESSLER:** Yes, that makes sense. And I
2 think what you're saying is that that dose is
3 going to be low, and it --

4 **DR. NETON:** Yeah, it --

5 **DR. ROESSLER:** It doesn't really matter,
6 then, how --

7 **DR. NETON:** Right.

8 **DR. ROESSLER:** -- uncertain it is, because
9 it's going to be so low. And probably that's why
10 those organs are not included in ICRP to begin
11 with.

12 **DR. NETON:** That's right. That was my
13 thought process all along.

14 And I think Dave knows this better than I
15 do, but I think if you look at it, I think
16 they're several orders of magnitude lower than
17 the metabolically-involved organs, typically.
18 And if we conservatively picked our next-highest
19 one that's not metabolically involved -- I'm not
20 sure that's the right word, but I think you know
21 what I'm talking about -- virtually it's almost
22 impossible to inhale enough material to get the
23 probability of causation up there for most of
24 them. I can't say we'd cover all possible cases,
25 but I'm pretty sure that's going to be the case.

1 **DR. ZIEMER:** I think Henry's been waiting to
2 ask his question.

3 **DR. ANDERSON:** Yeah, I just wanted to follow
4 up a bit on that using sensitivity analysis. But
5 it's very difficult for us to address the issue
6 of your -- the thrust of the whole law is to be
7 conservative on the behalf of the client, and
8 that gives a certain sense of comfort if it is.

9 But the bottom line question is how
10 conservative? And as we just heard, that in many
11 of these internal doses it ultimately makes no
12 difference in the probability outcome. And so I
13 think -- or it may not make much difference at
14 all because of a variety of factors, and
15 therefore while we're saying we're being
16 conservative there, in reality it's -- it isn't,
17 because it doesn't impact the outcome.

18 And what I'm asking is have you taken a
19 series of scenarios where you have -- and of the
20 most data you would want, and then remove some of
21 those data elements to see how does the system
22 operate when you have some of that missing, to
23 get a sense of is it always erring on
24 conservative side; and if so how much?

25 Because you could have it go -- I think the

1 last time we talked a little bit about that if
2 you have a great deal of data, that may in fact -
3 - because you reduce the uncertainty so much it's
4 not -- you're far more certain in the actual
5 dose, and this could then be to the individual's
6 detriment because now their probability drops
7 below, where if some of their data had been lost
8 the system would err on the other side.

9 I think it's hard to understand --

10 **MR. ALLEN:** I realize --

11 **DR. ANDERSON:** -- how much of that is there,
12 and where are the soft points in this system that
13 may need to be subsequently tweaked. You could
14 either wait till you have a lot of field
15 experience, or you can take like the Monte Carlo
16 system and pick a number of these to run through
17 in a theoretic sense, and then have as the gold
18 standard a actual dose -- complete exposure model
19 that you would have and say what does it predict,
20 and then which of these elements are playing the
21 most in the system.

22 Has any of that been --

23 **MR. ALLEN:** Long question.

24 **DR. ANDERSON:** Yeah, it's a -- I don't want
25 to read the transcript. I think you got the idea

1 what I was trying to get at.

2 **MR. ALLEN:** I think I got the idea. If I'm
3 sure of what you're asking, you want to know how
4 much effort we put into determining what
5 individual parameters, how sensitive the dose is
6 to -

7 **DR. ANDERSON:** Yeah.

8 **MR. ALLEN:** -- individual parameters such as
9 maybe the date, et cetera.

10 What you saw today was essentially our
11 effort towards determining how sensitive it was
12 to date, to the date of intake, or how sensitive
13 it was to chronic -- estimating it as chronic
14 versus acute. So you've seen a portion of it.
15 And no, we're not complete with that yet. And we
16 probably won't be complete with every possibility
17 when we start doing dose reconstructions. And as
18 Larry said, there'll be technical basis documents
19 coming up. As we need to learn something, we
20 will attempt to learn it. We will document it,
21 and we will finish that case.

22 Does that make any sense?

23 **DR. ANDERSON:** A little. It's how do you
24 know, though? You'll go through it, you'll end
25 up with a result, but unless you run it through

1 the model with multiple scenarios you won't
2 really get a sense of when you need more data or
3 not.

4 **MR. ALLEN:** Right. A lot of times we can
5 come up with -- if we're not certain about some
6 parameter, we can come up with various
7 theoretical scenarios and run through any number
8 of scenarios to see how sensitive it is that way.

9
10 As far as any other type of sensitivity, we
11 don't know exactly what intakes a particular
12 person got, so -- our whole job is estimating
13 these, so we don't have anything to compare with
14 it, once we've done our best job on that.

15 **DR. ANDERSON:** Yeah, but I'm focusing on the
16 model output, and therefore what goes into the
17 model. How it reflects reality is nice, but how
18 the model works and accounts for when things are
19 missing is where we get into how conservative is
20 the output from it. So if you kind of remove all
21 of the units, basically we're saying the outcome
22 here is 15 and the outcome here is one, and if
23 you change this one from a 1.1 to a 1.2, here's
24 what may happen. And that may be, again, the
25 question about defaults, for instance. Here, if

1 you're -- depending on what your default is for
2 an internal dose, it becomes very important.

3 **DR. NETON:** Right. There are a number of
4 things we haven't talked about today, that I
5 think maybe I've given a misimpression that we're
6 always going to try to bracket these so that they
7 are not qualified for compensation.

8 In fact, when we talk about conservatism,
9 there's a number of things we haven't discussed,
10 which is the default solubility classification.
11 If we did not know anything about what the worker
12 was exposed to, whether it was an oxide or a
13 nitrate, we would in a conservative basis -- that
14 is, a claimant-friendly basis -- use the most
15 insoluble material. For instance, if it was a
16 dose to the lung, that would be consistent with
17 the bioassay data we were presented. So that's
18 what we mean by being conservative, so the dose
19 would be an overestimate, but it would be -- it
20 would have to be an overestimate consistent with
21 the data that were presented to us.

22 Particle size is another area where we have
23 some latitude. The default particle size for
24 this model is five micron aerodynamic median --
25 activity median aerodynamic diameter. It's

1 likely that many workers, particularly in uranium
2 fabrication facilities, were exposed to larger
3 aerosols. But unless we can demonstrate to the
4 contrary, we will use a more conservative default
5 size that would tend to maximize the worker's
6 dose because we couldn't prove otherwise.

7 So I don't know if that gives you a little
8 better sense. And we do need to look at those
9 parameters as to how much difference it makes;
10 you're right.

11 **DR. ANDERSON:** That's really my point, is
12 that the five microns, if you assume it's 95
13 percent of them are below five or not, the
14 question is what difference does that make.

15 **DR. NETON:** Right, and --

16 **DR. ANDERSON:** And rather than say, well,
17 we're using the most conservative, it may be most
18 conservative by .2 percent.

19 **DR. NETON:** Right, and we're doing that, and
20 --

21 **DR. ANDERSON:** The workers, I think, are
22 going to want to know. They're comforted by
23 saying it's conservative, but you'd like to know
24 --

25 **DR. NETON:** Right, and we're doing this.

1 And Larry mentioned that kind of one-step-at-a-
2 time approach. We just got finished doing a
3 comparison of this whole ICRP 66 default particle
4 size insolubility classes to the old ICRP 30, so
5 we're ready to address that issue if and when it
6 arises. So what you're suggesting makes a lot of
7 sense, and we need to do that.

8 **MR. ELLIOTT:** The accuracy we're trying to
9 achieve here is accurate decisions at Labor,
10 okay. And I think where your point is well taken
11 and where it comes to play is in those dose
12 reconstructions, in that middle group toward the
13 high end, say, 40 to 49 percent. And what do we
14 need to do, what do we need to understand about
15 the uncertainty, the soft points, what
16 contributes most to that probability of
17 causation? Is it the risk model? Is it the dose
18 reconstruction that went into the input
19 parameters of IREP? And those are the things
20 we're going to spend our time on looking at in
21 this point that you're making.

22 **DR. ZIEMER:** Thank you. Any further
23 comments or questions?

24 (No response)

25 **DR. ZIEMER:** Thank you, Dave.

1 will go first. And Bob, if you wouldn't mind,
2 would you use the podium up here, and then I
3 don't have to turn around.

4 **MR. ALVAREZ:** Yeah. Thank you for giving me
5 a few minutes. I won't take very long.

6 **DR. ZIEMER:** Bob is with the Institute for
7 Policy Studies here in the D.C. area.

8 **MR. ALVAREZ:** And some of you know me in
9 different, other incarnations.

10 I wanted to cover a couple of issues with
11 you, and I'll be as brief as I can.

12 One is the, I guess, the basic overarching
13 question of conflict of interest. Given that
14 this was an activity undertaken by the Federal
15 government itself for a national security purpose
16 where people were put at risk in certain
17 instances under circumstances where deliberate
18 decisions were made to not provide protection or
19 not to inform workers, the fact that the
20 government itself is essentially the liable party
21 in this places, I think, a very -- an additional
22 special burden on this committee, on the
23 institutions of government that have to implement
24 this program, to address those issues. And it's
25 not easy to do, because the Federal government is

1 the Federal government. But what I wanted to
2 propose to you is at least some possible ideas or
3 concepts to consider in terms of addressing this
4 conundrum.

5 One thought that I had, especially in terms
6 of the work that eventually will be undertaken by
7 whoever is chosen to -- as a contractor to
8 conduct the rather mammoth task of individual
9 dose reconstruction, is for this committee to set
10 up a subcommittee that would report to the full
11 committee that would be comprised of worker
12 representatives.

13 That subcommittee should be provided with
14 necessary resources to hire technical people to
15 be able to do some quality assurance work on the
16 effort of the contractor, particularly with
17 respect to review of work scope, spot-checking
18 ongoing work, and at least some sort of review of
19 the general approach that's going to be
20 undertaken; and for the committee to do some
21 periodic spot-checking and reporting to the full
22 committee itself, not being separate, but being a
23 function of this committee.

24 It would be a way, I think, of adding a
25 layer of quality assurance; but I think also, in

1 a way more important, adding, I think, an element
2 that could really build public trust in this
3 process. And I think public trust is very, very
4 important to this.

5 The second sort of issue that I wanted to
6 raise with you really has to do with where this
7 committee will be heading once this is -- once
8 the individual dose reconstruction issues are
9 addressed, and that is the issue of the special
10 cohorts themselves. And I think -- as you know,
11 if you look very carefully at the circumstances
12 that led to the enactment of this law and the
13 issues that were raised, is that we're not just
14 dealing with an issue of dose and effect and
15 response. We're dealing with social policy. How
16 do we -- how does science inform social policy,
17 which has to do with making right with the past?

18 And then you get into questions of ethics.
19 And I think this committee should consider having
20 on its -- as one of its members an ethicist,
21 because there are circumstances when you start
22 especially to get into the issue of the special
23 cohort, if you see -- if some of you who were
24 around or if you look back at some of the
25 legislative history that led to the creation of

1 this particular provision of law, was the
2 revelation that there were workers who were put
3 at -- knowingly put at risk without their
4 knowledge, and were denied any protective
5 measures in a deliberate manner.

6 The infamous 1960 memo that came out of
7 Paducah where someone was asking if -- was
8 pointing out that workers were probably getting
9 heavily exposed to neptunium particularly in the
10 fluorination processes, the bag house workers,
11 people who were hitting large cloth bags laden
12 with neptunium with metal rods in street clothes.
13 And the reply that came back was we are not going
14 to measure them, any exposure for neptunium. We
15 are not going to provide them with necessary
16 protection. And by the way, there was also a
17 request to do postmortem. We're not even going
18 to look at them after they die, because we are
19 afraid that this information would lead to the
20 union demanding hazardous duty pay.

21 There is a huge ethical issue being put on
22 the table by that memo. I think you need someone
23 to help you sort these kinds of issues out
24 because there were decisions made, shortcuts
25 made, and the like.

1 I also want to draw your attention to an
2 effort that came out in March of last year that
3 has never really -- that was never really
4 completed, but it is what it is, which was an
5 attempt to establish an understanding of the mass
6 balance flow of recycled uranium in the
7 Department of Energy complex. This undertaking
8 sort of went to a preliminary phase, and then was
9 shut down when the new administration came in,
10 and it never really sort of went further beyond
11 that.

12 But that particular set of studies,
13 documents, I think, provides some very important
14 insights. Approximately a quarter-million tons
15 of uranium was recycled for the purposes of the
16 United States nuclear weapons program. That's a
17 very large amount. That material wound its way
18 throughout many of the existing plants and a lot
19 of defunct plants, and to a lot of outsourcing
20 facilities that were doing contract work for the
21 AEC during the fifties and sixties.

22 And I'm mindful of a couple of things. For
23 example, in reviewing the Hanford report and the
24 Oak Ridge site-specific reports, it was very
25 clear in these reports that the initial product

1 that was coming out of the U tank, the tank
2 farms, from the U farm where they were extracting
3 uranium from waste that was coming out of the
4 bismuth phosphate extraction process, that that
5 plutonium did not meet spec for Oak Ridge. In
6 other words, there were excessive levels of
7 plutonium in there, and Oak Ridge was rejecting
8 this, not for health and safety reasons, because
9 they were just starting up their gaseous
10 diffusion plants and didn't -- were afraid of,
11 quote, gumming up the works.

12 So what happened when they weren't meeting
13 spec? This material wound up in Cleveland, Ohio,
14 in Harshaw, and those workers conducted the
15 fluorination process, which had the effect of
16 reducing the plutonium content that made it
17 allowable to be received by Oak Ridge. And think
18 about those workers who might have been hitting
19 cloth bags laden with neptunium and plutonium
20 from the first batches coming out of the U tanks.

21 These are issues that I think you really
22 need to look at. And I think it's important to
23 look at these issues as you start to move toward
24 the special cohort problem in the context of
25 understanding the flow sheets. There are still

1 flow sheets that are still not public that need
2 to be addressed. For example, we really know
3 very little about the thorium U-233 flow sheet of
4 the AEC/DOE. Where did all that stuff go, who
5 handled it, what was going on? Ultimately at
6 least a ton of uranium 233 was produced, and it's
7 sitting around at the DOE complex. There was a
8 flow sheet involving this. Where is it? Where
9 were those workers?

10 I also think that some of the work that has
11 been done in the past in the previous years,
12 particularly in the year 2000, looking at the
13 occupational -- the history of occupational
14 protection at the gaseous diffusion plants that
15 was done by the DOE Office of Environment Safety
16 and Health, I think, are very instructive.

17 And it would be useful to have more of these
18 studies done as you pursue that issue of the
19 special cohort, because these are things that --
20 where you need to have -- it's almost like
21 putting together a painting where dose
22 reconstruction, in and of itself, gives you some
23 part of the image, but to really get the image
24 sharper in focus and add more to the picture
25 itself, you have to start to look at the issues

1 that were swirling around at the time -- whether
2 or not, for example, there is any evidence that
3 workers were knowingly put at risk and no
4 protective measures were provided in a deliberate
5 manner.

6 You have to look at whether or not any of --
7 what kinds of jobs really have -- may constitute
8 high-risk jobs from the point of view of a
9 special cohort, again looking at the -- for
10 example, workers who may have been handling
11 uranyl nitrate in the calcining operations in the
12 300 Area at Hanford when they were getting the
13 first batches out of the U tanks and converting
14 that material.

15 What's abundantly clear in the DOE report,
16 the site-specific reports about recycled uranium,
17 is that, one, there were no protective measures,
18 no limits set for exposure to neptunium,
19 technetium, or plutonium, for that matter, in
20 these settings, and that each site had its own
21 way of measuring for it for purposes of material
22 transaction, which leaves huge questions about
23 inventory discrepancies.

24 So these are things that I'm just urging you
25 to think about as you move forward in terms of

1 establishing a conceptual basis for addressing
2 special cohorts.

3 Thank you very much.

4 **DR. ZIEMER:** Thank you, Bob. Before you sit
5 down, let me ask if any of the Board members have
6 questions that you'd like to address to Bob, or
7 things for clarification?

8 (No response)

9 **MR. ALVAREZ:** Thank you.

10 **DR. ZIEMER:** Thank you. Next we have
11 comments by Richard Miller from the Government
12 Accountability Project. Richard.

13 **MR. MILLER:** Good afternoon. I would be
14 remiss if I didn't come with handouts, and so I
15 have. I was even thinking about handing out what
16 I handed out last time so we could talk about it
17 again.

18 I'm going to sort of touch on a number of
19 points very quickly. I am also going to pass
20 around, once you have that memo in hand, a
21 picture. I don't have one of those beautiful
22 overheads to make it visible for everyone.

23 But today's discussion on dose
24 reconstruction -- and I may be misreading both
25 the guidance for internal and external, and I may

1 be misreading the rule in terms of the process
2 steps that are followed -- but the appearance is
3 that NIOSH will receive initially internal and
4 external dose badge -- internal bioassay data and
5 external dose badge data, and then based on that
6 two things seem to happen.

7 One, there's a culling process that goes on
8 that seems to weed out low dose and sort of the
9 obvious high dose cases, and the high dose cases
10 that may be eligible you sort of push through.

11 But then there seems to be this second step,
12 which is that if you're not sort of weeded out
13 presumptively and you go through an interview
14 process, there is a -- it appears to be that
15 there is a presumption of regularity in the dose
16 record unless either the interview or some other
17 intervening event clues the folks who are the
18 contractors doing the dose reconstruction that
19 they should not presume that this paper record,
20 as delivered, can be massaged and analyzed as it
21 was in our presentations today.

22 Now both the legislative history of the Act,
23 and more particularly some of the studies that
24 actually Bob Alvarez mentioned earlier on the
25 history of the radiation protection programs --

1 and this was done at Portsmouth, Paducah, and Oak
2 Ridge with special allocated funding by Congress
3 at some expense, with a team of about 35 people -
4 - not quite a tiger team, but reminiscent of --
5 and conducted in cooperation with the unions at
6 these three sites in order to encourage a high
7 degree of participation in interviews.

8 So many people received information under Q-
9 clearances, and needed to be encouraged they were
10 comfortable to disclose what they knew.

11 Secondly, people were concerned about retaliation
12 if they're active employees, which they were in
13 many cases. And the union actually sort of
14 nudged people and say, it's okay to talk to these
15 guys, right? Don't be shy.

16 Well, out of the course of approximately 125
17 transcribed interviews done at each site -- there
18 was about 375 transcribed interviews, coupled
19 with an extensive paper review of not -- and the
20 interviews were done with both hourly and
21 salaried people in health physics and management,
22 as well as on the ground floor in production.
23 And what came out of at least those three reports
24 was that the history of radiation protection is
25 pretty darned spotty. And let me just give you

1 sort of some of the kind of interesting findings.

2 One was that they -- for many years you had
3 the Monday morning urinalysis that was provided.
4 And that was sort of a point of bemusement,
5 because after you'd spent a good weekend drinking
6 some beer, if you had soluble uptake most of it
7 was gone by the time you were there. Now that
8 was good for flushing it out of your system at
9 the beginning of the week to set a baseline, but
10 it might not have been too good at capturing what
11 happened the week before. And so you had
12 corrections over time to improve and obviously
13 avoid and create obvious post-incident and other
14 forms of sampling methods, but you saw a lot of
15 irregularity.

16 You had irregularities with respect to even
17 external monitoring. We saw for the people who
18 were involved in making uranium derbies from
19 magnesium reduction furnace -- in the magnesium
20 reduction furnaces, and they were told to go in
21 and chip all the slag off, right, to get the
22 uranium derby out. Well, lo and behold, they
23 didn't have any extremity monitoring.

24 Bob Alvarez talked about the poor folks who
25 had to go into the bag houses with the caked,

1 thick dust that was -- with very high
2 concentrations, up to 15 percent of neptunium
3 237, and take steel rods and literally beat the
4 bags, and you have big clouds of dust. This
5 doesn't turn up in the dose record, and it
6 doesn't turn up in the paper record very readily.
7 It came back through sort of historical research.

8 And so the challenge that I saw was, whether
9 it be at -- or take a good example at Portsmouth,
10 which NIOSH actually was quite instrumental in
11 uncovering, was the absence of neutron
12 monitoring. You had freeze-outs in the uranium
13 enrichment process which would lead to what folks
14 euphemistically referred to as the slow cooker
15 effect, and you would have unmonitored neutron
16 exposure.

17 Now only certain people would be even
18 potentially at risk, mostly maintenance people.
19 But you don't have any dose record with which to
20 come back and sort of reconstruct it. Was it
21 significant, was it not? That's certainly
22 debatable about the degree of significance, and
23 some have suggested you go back and re-examine
24 the glow curves. But it's going to be quite a
25 challenge where you don't have monitoring to

1 start with.

2 So the concept of missed dose, as I sat, at
3 least, in the back row today and watched it, I
4 had a different meaning of the word "missed
5 dose," and it's not that which is unrecorded
6 because it falls below the limits of detection.
7 It's purely either unmonitored for dose or
8 improperly accounted for dose. And so the paper
9 record itself doesn't provide a very firm
10 foundation.

11 Now how do you get clued in that that paper
12 record is or is not a good basis? And what I
13 don't get is, from reading the rule, is what
14 automatically makes the contractor leap into the
15 sea of all of the other forms of information that
16 can be out there. Most of the occurrence reports
17 at certain sites have never been made public.

18 For example, at Los Alamos they have never
19 been made public. That's a very interesting
20 source of data which is not organized in
21 electronic form, and if you don't have those
22 occurrence reports readily available or the
23 claimant doesn't have the ability to go and get
24 access to them, and NIOSH isn't clued in as to
25 whether there was even an occurrence report

1 associated with a particular event, you're left
2 with, as a claimant, operating in a vacuum.
3 What's to push it forward?

4 Well, it seems to me that two things serve
5 as sort of important obstacles in what needs to
6 be done. The first obstacle is what I see in the
7 request for proposal for the contractor. And the
8 obstacle that seems most evident is -- and I'll
9 just read it here from the RFP on dose
10 reconstruction research:

11 (Reading) NIOSH does not expect that the
12 contractor will be responsible for the physical
13 collection and retrieval of records at the DOE
14 and DOE contractor facilities.

15 And then it goes on to say:

16 (Reading) Plans for site visits and the
17 research to be performed must be approved by
18 NIOSH.

19 DOE, on the other hand, is the single
20 largest impediment to NIOSH's access to this
21 information, and the biggest single opportunity.
22 And at this point, if the contractor doesn't have
23 the freedom to in effect go do a deep dive on
24 what's in the vaults, and you're left with what
25 DOE chooses to give you and rely in large part on

1 what the claimants may be able to tell you as
2 best they can recall, recognizing they operated
3 for many years on a need-to-know basis, this
4 process seems significantly disadvantaged.

5 And one way to crawl out of this -- and it's
6 clearly not something that you've gotten a
7 statutory directive to do, so this is not implied
8 as a criticism of your failure, NIOSH's failure
9 to do what they should be doing -- but the kinds
10 of reports that were generated by DOE sort of for
11 the three GDPs gave us a road map, as it laid out
12 the systemic irregularities in the entire system
13 of radiation protection from the beginning of the
14 sites up to present.

15 And you can -- that tells you a lot about
16 what kinds of questions you need to ask. And
17 most sites don't have that. Most sites don't
18 have that history laid out. And I don't know
19 whether NIOSH is going to be in a position to do
20 it. But it seems to me absent that, claimants
21 are going to be clueless, in many respects, to
22 direct you around whether the systemic
23 programmatic approach was proper or improper, and
24 whether the paper record that underlies it has
25 any basis. And that's a larger question than

1 many claimants can surmount.

2 Secondly, I wanted to talk a little bit
3 about -- just very briefly -- this memo I passed
4 out. Bob actually -- Bob Alvarez unfortunately
5 stepped on my story a little bit, but this was
6 the famous Paducah memo. And I don't know if any
7 of you had seen it before, but I want to just
8 highlight it because it's hard to read. It was
9 never of very good quality. It fell out of the
10 drawer, so to speak, when the Office of
11 Environment Safety and Health went to do its
12 oversight assessment. It never surfaced in all
13 of the years of litigation, worker comp claims
14 that had been brought at that site. I don't know
15 how this thing never came to light for all of
16 these years, but it was sitting in the file
17 drawers.

18 Nevertheless, there it is. And what it
19 says is that workers were handling neptunium 237.
20 It was in a very fine particle form, about a
21 half-micron in diameter, so the masks that -- the
22 respiratory protection they had was completely
23 inadequate, even if you wanted to put those old
24 World War II Army masks on in these very
25 physically hot facilities inside. And what they

1 found was, if you look -- I don't know -- it's on
2 page two here, it says that they were supposed to
3 wear nose and mouth face masks, and there's a
4 little part marked in the right-hand column:

5 (Reading) I watched one man push up his
6 mask, smoke a cigarette using potentially
7 contaminated hands and gloves. They've devised
8 some air scoops, but lo and behold, it doesn't
9 seem to be a very good job of ventilating the
10 cascades when they cut them open.

11 The conclusion of the memo on page three is
12 that there are possibly 300 people at Paducah who
13 should be checked out -- this is for neptunium
14 237 -- but they -- I presume referring to the
15 contractor, in this case Union Carbide --
16 hesitate to proceed to intensive studies because
17 of the union's use of this is an excuse for
18 hazardous duty pay.

19 They then go on to suggest, well, look -- on
20 page four -- you know, we really ought to go
21 ahead and do some toxicological studies here. We
22 should get our arms around this. And they
23 pointed out the need to get postmortem samples on
24 any of these potentially contaminated met -- this
25 is on the top of page four -- for correlation of

1 tissue content with urine output. And the memo
2 goes on to say:

3 (Reading) But I'm afraid that the policy at
4 this plant is to be wary of unions and any
5 unfavorable public relations. So they weren't
6 willing to test the living, and they weren't
7 willing to test the dead.

8 So you get to the bottom of the memo, and it
9 says, well, it appears we've got a neptunium
10 problem, but we don't have the data to tell them
11 how serious it is, and on life goes.

12 Of course, the workers were never told about
13 this. And the first monitoring for transuranics
14 was conducted at that site on a voluntary basis
15 in 1992, so some 30-odd years later. And even
16 then there wasn't a mandatory transuranic
17 bioassay program for several years thereafter.
18 And you know, the only reason people even knew
19 that these materials were in use and that there
20 should be some assay program was because the
21 newspapers were reporting they were finding it in
22 ground water.

23 Now when the Department of Energy ended up
24 contracting for sort of some kind of general
25 exposure assessment at this plant, one of the

1 things that was startling was that although there
2 were very low quantities of neptunium 237 in the
3 parts per million range in any given ton of
4 uranium, what they discovered was that this stuff
5 preferentially accumulated and deposited out on
6 certain pieces of equipment. And only when you
7 cut them open to do maintenance work -- say the
8 compressor blades, for example, where you had to
9 take the barriers apart -- would you wind up with
10 up to 55 percent concentration of neptunium 237.
11 And there was no radiation protection program in
12 place, and all of the paper trail that existed at
13 that site which sought to assess this risk never
14 accounted for that.

15 Now we've been blessed with a lot of money
16 being spent on answering the questions about what
17 happened to people in the feed material building,
18 the 410 building and others at Paducah. And so
19 now, today, lay people like myself can talk about
20 it with some degree of confidence because it's
21 been so well-documented.

22 What do you do, though -- and this is the
23 challenge, I guess -- how do you get this kind of
24 understanding at many of the other types of
25 facilities in terms of the vast missed dose

1 problem? Because to me this is what missed dose
2 is. It's not whether it goes unmonitored below
3 the limits of detection. It's do you -- is this
4 going to be a case of garbage in/garbage out in
5 terms of dose reconstruction, with high degrees
6 of precision and error bars around measures of
7 central tendency that bear no relationship to
8 what is an accurate characterization of what
9 happened? That's a real challenge.

10 And we shouldn't be misled by the high
11 degree of precision that we saw in terms of
12 estimating the tweaks around the uncertainties
13 when we may be missing the forest for the trees.
14 And frankly, if you went and picked up the
15 telephone and started interviewing workers at
16 Paducah three years ago, before this story broke
17 on the front page of *The Washington Post*, they
18 couldn't have told you one iota about it. They
19 couldn't have told you.

20 So this is a real challenge, and I think
21 it's such a profound challenge that I would
22 encourage you perhaps to sort of -- both to
23 inform as a process step, and secondly maybe as a
24 recommendation to the Secretary -- hint, hint --
25 that you bring a panel in of folks who've done

1 this kind of what I would call forensic dose
2 reconstruction, which is very much what you're
3 doing here, right? You're trying to basically
4 come in and pick up the scene of what in some
5 respects were either cover-ups or mismanagement
6 or error, or maybe well-managed programs, but for
7 which in many cases there's a high degree of
8 irregularity.

9 The tiger team reports, when Dr. Ziemer was
10 at DOE, and Leo Duffy and you and Admiral Watkins
11 were pushing these tiger teams through, and
12 although it became a dirty word to talk about how
13 wonderful tiger teams were when the next
14 administration came in, those reports uncovered
15 extraordinary irregularities in your radiation
16 protection programs. And these really should be
17 the centerpiece about informing the
18 questionnaires and the thinking that goes into
19 it.

20 Now perhaps -- there's been some interesting
21 dose reconstruction projects underway. There's a
22 very expensive one underway now in its concluding
23 phases at the Mound facility that MJW has been
24 doing as an outcome, frankly, of litigation that
25 was brought there for the failure of the

1 radiation protection program.

2 And it will be very interesting to sort of
3 hear how did they attack those problems, and what
4 were the records access issues they dealt with.
5 Because one of them, we learned, was that the
6 books -- much of the data was handwritten in
7 books, and the books were shipped to Los Alamos -
8 - I mean, to Albuquerque, and they were stored in
9 warehouses far from the Mound facility. And then
10 they had to bring these books back, and it turns
11 out the books were contaminated. So they had to
12 copy them in a special copying machine, because
13 you had a serious hot records problem both on-
14 site and off-site.

15 And so these are some interesting -- now
16 they're spending six, seven million dollars on
17 this dose reconstruction. And I'm not suggesting
18 you spend that per site, but I am suggesting that
19 there's a lot to be learned about all of the
20 particular obstacles they stumbled over.

21 Likewise, the work that Dr. Arjun Makhijani
22 did at the Fernald facility, which as been well-
23 published, and a number of you may be familiar
24 with it, but it would be worth, I think, your
25 all's time to hear about what Dr. Makhijani

1 encountered where he had access to records you
2 may never see, because he got them compelled
3 through discovery and through the lawsuit for the
4 lawyers that where he was working with.

5 And you wound up with the documents that
6 showed what the pattern of cover-up was, and what
7 he also learned was that at the Fernald facility,
8 at least with respect to uranium, over half the
9 work force was exposed in excess of the
10 prevailing standard at the time for a decade, and
11 in one year it was 90 percent of the work force,
12 the production work force itself. Pretty
13 startling, and that was based on a urinalysis,
14 post hoc urinalysis. Maybe it would be worth it
15 to hear from him.

16 And likewise, whether it's worth it or not
17 -- and I don't want to step on politically
18 sensitive turf -- but Mark Griffon's research,
19 and the work that he went through at Paducah
20 where he took the electronic record and decided
21 should we just accept the paper record of dose,
22 external and internal, and what happened when you
23 dove underneath the surface of that paper record
24 and what did you find.

25 In other words, when given -- I don't know

1 how much money they got; six, eight hundred
2 thousand, a million bucks between them and the
3 University of Utah to do the deep dive with lots
4 of resources and lots of staff, what did you
5 discover? And are there questions and methods
6 that need to be looked at, because I think the
7 task of the contractor here is as much forensic
8 as it is scientific.

9 Lastly, I would pass around, mostly for
10 amusement value, a photograph. This particular
11 photograph is appearing in a copy of *The Bulletin*
12 of *Atomic Scientists*, and I'll give you a copy of
13 the magazine for your record. This is a picture
14 of an individual who is stamping a uranium derby,
15 and he is straddling the uranium derby between
16 his legs. His dosimetry badge, however, is
17 pinned to his lapel, nowhere near his gonads.

18 And the question is, when you were -- when
19 the discussion occurred this morning about, well,
20 we're going to make all these assumptions about
21 how effectively these dose badges are capturing
22 it, and we're going to have some uncertainty bars
23 around it, and we're going to look at the
24 geometric -- what's the relationship of
25 whatever's being emitted to the body, lo and

1 behold, this is not capturing that dose, or not
2 very much of it.

3 And so the question becomes how are you
4 going to account for what few workers would ever
5 bother to tell you, which is that they straddled
6 uranium derbies? And then how are you going to
7 go estimate that dose thereafter?

8 And so the real world uncertainties are not
9 just simply giving the benefit of the doubt. The
10 real world uncertainties have to be accounted for
11 because you have to overcome all of this. This
12 is nothing -- that reality is in no way captured
13 or reflected in the methods that are given in the
14 guidance, that I've been able to perceive.

15 And does the uncertainty, the 95 percent
16 error bars around your dose estimate, does that
17 capture that or not? Does that fall outside of
18 those kinds of everyday work experiences? And if
19 it doesn't, then what are you going to do if it's
20 not captured? What are you going to do to
21 account for that? How are you going to account
22 for that?

23 Lastly, it's hard -- at least from the
24 outside, as an outsider, just sort of reading
25 documents and listening to the discussion -- to

1 figure out how your proposed dose reconstruction
2 rule fits in with the special cohort
3 determinations. And the dovetail is I don't know
4 how you cannot fit the two together. I don't
5 know how you can deliberate on this rule and not
6 look at that policy or rule or whatever it's
7 going to be down the road.

8 How are you going to determine whether it's
9 feasible to estimate dose with sufficient
10 accuracy? That's the policy question, coupled
11 with whether people may have been endangered, to
12 put someone in a special cohort. What in this
13 process that we see here would lead you to the
14 conclusion that it's not or it is feasible to
15 estimate dose with sufficient accuracy?

16 And where is the continuum between the dose
17 estimation process and falling off the cliff by
18 saying, eh, it ain't feasible here? And that is,
19 is the decision, well, we'll toss the claim
20 because we don't have enough information, or is
21 it we'll send them down to the petitioning
22 process? And it would be helpful to see how
23 these fit together to know whether there's a
24 seamless web of coverage for a potential
25 claimant. And I would encourage you all to think

1 about grouping those together before you give
2 recommendations on whether this is the
3 appropriate approach.

4 **DR. ZIEMER:** Okay. Thank you for those
5 thought-provoking comments.

6 Let me ask if there are any questions here
7 that the Board may have. Yes, Roy.

8 **DR. DeHART:** Mr. Miller, I'm curious, how
9 are we to handle the unknown? How are we to
10 handle that which we don't know, which perhaps no
11 one knows? Or the unusual events, such as the
12 photograph that you show, in dealing with this
13 situation? Should all become special cohort?

14 **MR. MILLER:** Well, I think that -- I'm going
15 to turn the question around just for the moment,
16 and maybe it would be useful for the committee to
17 get a good grounding in the degree and scope of
18 irregularity in the way in which radiation
19 protection programs have been historically run,
20 at least as DOE has done its own self-
21 assessments. And I would only -- this is not to
22 not answer your question, but to say should you
23 presume regularity in the sense -- in the paper
24 record that NIOSH will receive?

25 My answer to that is that I don't think you

1 should presume regularity. And then I think your
2 inquiry that follows, which I don't know that can
3 be -- there's sort of a couple of ways to do it.
4 One is to look at the problem collectively. Can
5 we get enough information on the history of the
6 radiation protection programs at these sites?

7 And in Hanford, in the cases of many
8 subparts of the various sites, or the big ones,
9 Los Alamos and of course Oak Ridge, you're going
10 to have to subgroup how effective were these
11 programs in each of these different areas. And
12 then once you have some larger sense about
13 whether there's regularity, whether the sort of
14 radiation assessment procedures, as we understand
15 them, were followed, then you can say okay, at X-
16 10 they had a great program for assessing
17 internal dose, and we have a high degree in
18 confidence that the methods they followed were
19 the best, and we know how to correct for them
20 even. And you may find that at other facilities
21 you can't presume that regularity.

22 Then the issue becomes what do you do with
23 the special cohorts? I think in the special
24 cohorts you've got a group, the people you know
25 that were at the greatest risk, take the high

1 risk occupations, and you match them up in some
2 sort of what I would consider to be crude
3 assessment of who falls in and who doesn't,
4 because you're always going to have somebody
5 complaining right at the margin they didn't get
6 in, right? But you're going to have to sort of
7 come up with a box that says these are the people
8 that were really at risk, and assign in a sense a
9 collective risk criteria because we can't pin it
10 down for them. Which is what Congress did with
11 the special cohorts for the facilities it
12 covered.

13 I think that this is a real challenge. This
14 was the compromise. You're asking the question
15 about what was the compromise. I happened to be
16 in the room -- privileged, in fact, to work for
17 the union that represented a lot of nuclear
18 workers in the complex. And if I'm not speaking
19 out of turn here, I'll sort of relay the debate
20 that took place in Congress that punted this
21 issue to you all to grapple with.

22 First there was legislation that was filed
23 that said, look, let's treat people like they're
24 treated in RECA and just presume. And people
25 said, look, we can't throw out sound science.

1 You're right. So we said, let's apply sound
2 science where it exists, and where it doesn't and
3 there's really good reason to believe that people
4 may have been put in harm's way and there's
5 irregularities, you shift them to the special
6 cohort.

7 And so the debate was between those that
8 wanted to just do it, just provide the broad
9 special cohorts, and those who just simply wanted
10 to use a dose concept. And the lesson actually
11 came out of the Veteran's Administration program,
12 which said wait a minute, the dose estimation is
13 -- there's so little data upon which to do good
14 dose estimation that where you can't come up with
15 good dose estimates you've got to give people the
16 benefit of the doubt, right? And I think that's
17 really where you need to come down at the end of
18 the day.

19 Otherwise, what's going to happen is as your
20 dose reconstruction estimates come out and you
21 have -- and this will only -- sort of hindsight's
22 the only way to know this -- but as you have lots
23 of these coming out, and they'll come before your
24 committee and you start looking at these cases,
25 and you're saying people you think should qualify

1 aren't qualifying, what are you going to do,
2 right? Then it's going to sort of dawn on you,
3 wait a minute.

4 So my recommendation is the most thoughtful
5 way out of this box is to -- and perhaps -- is to
6 get the best histories of radiation protection
7 programs put together in the most critical way
8 possible, as was done for the three GDPs, because
9 it is a road map to what you can rely on and
10 can't rely on on a building-by-building-by-
11 building basis. It's enormously illuminating to
12 look at that. And then you can decide from
13 looking at this, they did an okay job with the
14 folks in this part, but they didn't here. So we
15 can narrow that cohort, perhaps, to those that
16 were put in harm's way but weren't properly
17 monitored, weren't told.

18 One thing we do know -- and it really is an
19 ethical question -- if you're going to put people
20 in harm's way and you're not going to tell them,
21 as this memo made a very conscious decision --
22 and this was not isolated to Paducah, and this
23 was not freelancers in the DOE complex. This was
24 the official government policy, as was uncovered
25 at site after site after site after site in the

1 DOE complex. We have a stack of documents that
2 look like this going back.

3 Why? Well, because the government didn't
4 want -- the insurance division of the Atomic
5 Energy Commission didn't want to deal with claims
6 and the costs. They were concerned about adverse
7 publicity. They were concerned about demands by
8 unions for hazardous duty pay. They were
9 concerned about trial lawyers suing them. And
10 they were also worried about the consequences
11 that if this wound up in court you could lose
12 classified materials, or classification, rather.

13 So those were all -- so when you're dealing
14 -- my perception of this is that when you're
15 dealing with evaluating how to estimate dose, you
16 have to view it through the historical lens
17 through which it was done, and the notion that
18 this is remedial legislation that was intended
19 to, in a sense, cure cover-ups.

20 That's a long-winded answer.

21 **DR. ZIEMER:** Additional questions or
22 comments?

23 **MR. MILLER:** If I could --

24 **DR. ZIEMER:** Thank you very much.

25 **MR. MILLER:** Just with your indulgence, and

1 because I just came across my one last point I
2 just wanted to re-underscore from last week.

3 Larry, today, Larry Elliott, I think we were
4 discussing sort of the contracting process. And
5 I think it was you who responded to a question
6 from Dr. Melius about, well, how are you going to
7 deal with conflict of interest? And you said,
8 well, we're going to have a conflict of interest
9 plan that we'll negotiate with the contractor
10 after we select somebody. Is that a sort of a
11 roughly fair characterization, based on the RFP
12 language?

13 **MR. ELLIOTT:** Yes, there's -- the RFP calls
14 for a conflict of interest plan to be submitted
15 along with the proposal. That's part of the
16 evaluation of each proposal.

17 **MR. MILLER:** Right. Because we don't know
18 what the minimum criteria are for your conflict
19 of interest review, other than what was stated in
20 the RFP, I just want to re-underscore, because by
21 the time we all meet you may have selected the
22 contractor, at the end of March, I guess, right?
23 Is that -- you're planning on meeting by the end
24 of March, is that right? Advisory Board?

25 **MR. ELLIOTT:** Tentatively the next meeting

1 is set for the 25th of March, yes.

2 **MR. MILLER:** Do you have a rough estimate of
3 when you think the contract's going to be awarded
4 for dose reconstruction, rough time frame?

5 **MR. ELLIOTT:** It depends upon the number of
6 proposals we receive and the complexity of those
7 proposals that we have to review, and March could
8 be the earliest. I can't really predict at this
9 time.

10 **MR. MILLER:** Okay. Well, I'd just conclude
11 by sort of wanting to revisit one point, which is
12 that I think that transparency is one of the few
13 things that can build public confidence. And to
14 the extent that this question of transparency
15 with respect to conflict of interest can be
16 addressed in whatever plan that NIOSH comes forth
17 with for its contractors would be very valuable.

18 If the bidders don't propose it, I guess is
19 my point, to assure transparency, meaning that
20 the individual claimant knows who's
21 reconstructing their dose and what their work
22 history is and their corporation's work history
23 with any given site or claim, if they don't know
24 it's hard to have a lot of confidence in knowing
25 who's on the other side, because at least the

1 character -- at least two of the three bidders
2 that I understand are going to be submitting
3 bids.

4 And to that extent transparency, I think, is
5 sort of one of the things you all can impose
6 that's not stated explicitly in your RFP, but I
7 think would raise comfort levels so that people
8 know who's doing the work on the other side.

9 I think that's it.

10 **DR. ZIEMER:** Thank you.

11 Are there any other members of the public
12 who have comments? I just had the two had signed
13 up, but certainly offer the opportunity if
14 there's others that wish to comment.

15 (No response)

16 **DR. ZIEMER:** Let me ask if there are any
17 other members of the public who have come in this
18 afternoon who were not here when we had
19 introductions this morning, so we know who you
20 are for the record and who you represent. Anyone
21 that did not get introduced?

22 Actually Bob, you were one of those, but
23 you've now been introduced; Bob Alvarez.

24 Anyone else?

25 **MR. MORAN:** I'm Frank Moran from Westat

1 Company in Rockville, Maryland.

2 **DR. ZIEMER:** Others?

3 (No response)

4 **DR. ZIEMER:** Thank you.

5 Since we're a bit ahead of schedule, I think
6 in the interest of time we are going to proceed
7 with some of the materials that we would have
8 started with tomorrow morning, particularly
9 looking at the proposed rule 42 CFR 82. We, the
10 Board, has to deal with this proposed rule-making
11 in a manner analogous to what we did on 42 Part
12 81 -- that is, we are asked to review the rule
13 and comment, comment specifically on three
14 questions that are in the preamble to this rule.

15 In order to expedite that process, I suggest
16 that we proceed at this point in a fashion
17 similar to what we did at our last meeting, and
18 that is to go through that rule section by
19 section and see if there are questions for the
20 staff or comments that people wish to make. And
21 we'll go through the rule, and then we can
22 prepare ourselves for considering how to address
23 the three questions that are posed for us.

24 Is that agreeable, then, that we proceed in
25 that fashion?

1 (No response)

2 **DR. ZIEMER:** Okay, let's turn to the rule
3 itself. Page 50978 is the introductory material
4 that summarizes the rule and calls for public
5 comments. There's background on the following
6 page on statutory authority. There's information
7 on the legal requirements for dose
8 reconstruction, information on the purpose of
9 dose reconstruction, an explanation of how doses
10 are reconstructed, how they are conducted, and so
11 forth. The actual rule -- and then a history of
12 the rule development.

13 The actual rule begins -- I'm looking for
14 the page, the actual beginning here, just a
15 moment -- 50985. And of course at the very
16 beginning there's kind of an index to the various
17 sections, starting with Section 82.0 and so on.

18 So let us then begin with page 50986, and
19 we'll look at this section by section. We're not
20 going to read the sections, but we will pause at
21 each one, assuming the Board members have read
22 this again and again for their evening pleasure.

23 Section 82.0, any question on the background
24 information, or comments?

25 (No response)

1 **DR. ZIEMER:** I'll push us along here on some
2 of these questions if it's clear that there are
3 no comments.

4 82.1, purpose of the rule?

5 (No response)

6 **DR. ZIEMER:** 82.2, basics of dose
7 reconstruction? Roy.

8 **DR. DeHART:** I have a question under item
9 (a) of that. It says specifically that we are to
10 -- or in constructing the dose reconstruction
11 that the accuracy of the dose that has been
12 calculated -- and all of that information that
13 would come in, I assume, from DOE -- the question
14 that was raised by Mr. Miller on the accuracy of
15 that information, could NIOSH comment about how
16 they would attend to address that issue on the
17 accuracy of dose information provided to you?

18 **DR. ZIEMER:** And it may go beyond accuracy.
19 The dose information may be accurate, but I think
20 one of the questions being raised was does that
21 reflect the actual workplace situation, perhaps
22 was --

23 **DR. DeHART:** That's what I mean by accuracy.

24 **DR. NETON:** Yeah. The statement reads, if
25 found to be complete and adequate --

1 **DR. DeHART:** Yes.

2 **DR. NETON:** -- individual worker monitoring
3 data such as dosimeter readings.

4 That speaks to that issue, which is NIOSH
5 intends to use personnel monitoring data only
6 after a thorough review that the data themselves
7 were -- accurately depicted the exposure
8 environment of the worker themselves. And that
9 would require an analysis of the type of
10 materials that were in the workplace, the
11 energies of the emissions for the dosimeters, and
12 the adequacy of the bioassay monitoring program
13 to measure the workplace exposure elements.

14 So we would be relying on the process
15 information at the sites, a technical review of
16 the bioassay programs. We know for certain cases
17 bioassay samples were taken but no tracers were
18 used, so one doesn't know whether that represents
19 a ten percent recovery of the material or 95
20 percent. There are some studies out there, so it
21 will be review of those studies that have been
22 published that have evaluated those
23 circumstances.

24 So it would -- it's going to be very
25 facility-specific. But we certainly would not

1 use the data without first making a determination
2 if it was representative of the worker's
3 exposure.

4 **DR. ZIEMER:** And can you also comment on the
5 nature of your documentation of that? Would
6 there in each case, then, be some sort of a
7 report or an analysis that you provide?

8 **DR. NETON:** Yes. It is our intent that we
9 develop a facility profile for the facility that
10 documents such things as the detection limits,
11 the quality of the monitoring programs, that
12 could be used for the individual sites.

13 **DR. ZIEMER:** And this would be a public
14 document, so that if workers at that site felt
15 that it did not reflect what was going on there
16 would be ample opportunity for that information
17 to emerge?

18 **DR. NETON:** Yes.

19 **DR. ZIEMER:** If somebody said, you know, we
20 always straddled these things --

21 **DR. NETON:** Yeah, that's --

22 **DR. ZIEMER:** -- or whatever.

23 **DR. NETON:** That's our intent.

24 **DR. ZIEMER:** Well, I notice in that picture
25 it appears that the guy is wearing wrist badges,

1 and those would be very accurate determinations
2 of gonadal dose. That's not an anatomical
3 statement, but more of the -- I mean, I do know
4 my anatomy.

5 (Laughter)

6 **DR. ZIEMER:** The location of the wrists in
7 that case were similar. But -- I'd better stop.

8 In any event, is there some level of
9 confidence that the process -- I think this is
10 perhaps Roy's question, I don't want to put words
11 in your mouth -- would uncover irregularities
12 that might otherwise not appear.

13 **MR. ELLIOTT:** Let me add to Jim's response.

14 Yes, we're very aware of many of the reports
15 that Mr. Miller has mentioned, and the dose
16 reconstruction processes underway at like Mound
17 and Rocky Flats. Having those available to us is
18 a benefit. Our interview process, we hope to
19 establish some of these other types of things
20 that are not obviously evident and available in
21 records.

22 How do we try to get at that, beyond that?
23 That is something we're wrestling with. We
24 appreciate anybody's thoughts and suggestions on
25 how to improve in that regard. We feel that as

1 we go forward and accrete information and create
2 these profiles for a site, not only will that be
3 made public and available for comment, but a
4 report on each individual dose reconstruction
5 will go to the claimant as well as DOL for the
6 adjudication of the claim, and relevant
7 information from that individual dose
8 reconstruction effort in that report will be
9 pulled out and incorporated into the profile as
10 it's built.

11 So that will become part -- the individual
12 dose reconstruction report for a claimant won't
13 be public information, but the relevant new
14 information gained from that piece of the process
15 will be.

16 **DR. ZIEMER:** There was also some indication
17 that even the workers themselves may not be aware
18 of irregularities, so we certainly need to be
19 cognizant of other indicators that would suggest
20 that something was amiss, whether it's a mass
21 balance issue or some other sort of indicator.

22 **DR. DeHART:** Roy DeHart again.

23 The issue of the employee remembering what
24 their dose is and being able to refer to that on
25 interview, of course, is important, and probably

1 can only be done correctly if they're given that
2 information.

3 When it comes to the rule, once the rule
4 becomes final, I can't remember in reading
5 through this whether it allows you the
6 flexibility to adjust and make change. Does it?

7 **MR. ELLIOTT:** Yes, it does, and as with the
8 IREP - and you wanted to see the significant
9 changes that were made to those -- you would have
10 opportunity to review those. You'll also have
11 opportunity to review significant changes that
12 would occur in dose reconstruction methodology
13 that's in the implementation guidelines or the
14 technical basis documents.

15 That becomes part of the information we
16 present to you for your understanding and your
17 review of dose reconstructions, as well as your
18 review to comment and say this makes sense, this
19 should be -- this is a change that should happen.
20 Or if you feel conversely, you can express that
21 as well.

22 **DR. MELIUS:** But just to clarify that point,
23 that is not in the regulation, is it, that
24 review, that process? It's in the preamble
25 again. Do we have the same issue we had with the

1 other --

2 **MR. ELLIOTT:** (Nods head)

3 **DR. MELIUS:** Okay.

4 **DR. ZIEMER:** Right, and we may want to
5 return to that.

6 Henry.

7 **DR. ANDERSON:** Just a somewhat interpretive
8 question. Are you going to have to make for each
9 case a determination that the data is complete
10 and adequate?

11 I mean, like (a) here is if found to be
12 complete and adequate. That assumes that you
13 make a -- in order to begin, you're going to have
14 to make a determination, which might be from your
15 site-specific or -- what I think we've been
16 seeing through this whole thing is you're going
17 to use all the information you have available,
18 which is quite different from having to make a
19 determination, is it adequate. You could say
20 it's inadequate, but it's the best we have so we
21 will use it. And I just want to be sure you
22 don't get caught subsequently with being
23 challenged that it should not have been
24 considered adequate.

25 **DR. NETON:** I guess it's an issue of

1 semantics, but yeah, we will -- we do intend to
2 on an individual basis determine that the
3 information's complete and adequate to conduct a
4 dose reconstruction. Now that does not
5 necessarily mean that we have every shred of
6 available evidence out there. We just have
7 enough of it to be able to complete a dose
8 reconstruction, to make an unbiased determination
9 as to whether or not the person has a significant
10 exposure or not.

11 **DR. ANDERSON:** Okay.

12 **DR. ZIEMER:** But the rule does not require
13 that there be adequate dosimetry to do the dose
14 reconstruction.

15 **DR. NETON:** No.

16 **DR. ZIEMER:** It only -- it says if it is
17 adequate, you do it from that monitoring data.

18 **DR. NETON:** Right.

19 **DR. ZIEMER:** If not, you go to sort of plan
20 B.

21 **DR. ANDERSON:** To B, yeah. And what we
22 haven't seen is what's the model for plan C. How
23 would you use -- how would you do dose
24 reconstruction based on --

25 **DR. NETON:** Okay, I think I know where

1 you're coming from. I covered that --

2 **DR. ANDERSON:** It's kind of the levels. You
3 go A -

4 **DR. NETON:** Yeah.

5 **DR. ANDERSON:** And we really dealt with --
6 we're assuming you're going to have some level A
7 information and we're going to move from there.
8 I'm just curious as to -- C almost gets us into
9 the special --

10 **DR. ZIEMER:** No, but that's source term and
11 so on.

12 **DR. NETON:** Right, yeah. I gave an example
13 last meeting of how we would approach it from a
14 source term analysis based on the amount of
15 material that were there, the types of
16 operations, whether it was grinding, welding,
17 cutting, and to give a bracketing dose estimate
18 for the individual, keeping in mind that we are
19 not constrained to have single point estimates
20 for a person's dose. We can put a distribution,
21 and I think I indicated at that time that may
22 well be a range --

23 **DR. ANDERSON:** Okay.

24 **DR. NETON:** -- a uniform range, saying our
25 estimate ranges between one and ten rem. And

1 that would be a viable input to be able to put
2 into the IREP program.

3 **DR. ANDERSON:** Okay.

4 **MR. ELLIOTT:** If I could add a comment here
5 on this topic.

6 The paragraph right before (a), I think,
7 sets us up for this hierarchical approach. And I
8 would add that to advance forward and say the
9 dose reconstruction is complete -- whether it's
10 done by (a), just using the radiation dosimetry
11 data from the site and saying that's enough,
12 because the person's automatically is going to
13 achieve an award; or it's done by (c), through
14 source term and lot more of uncertainty
15 associated with it -- before we advance that
16 forward, we get the claimant to understand what
17 we've done, how we've done it, and seek their
18 agreement to move it forward.

19 **DR. MELIUS:** Yeah, one comment on that, and
20 then just to move it on to level D, which isn't
21 there.

22 I would, as I said before, I think it would
23 be very helpful to get a presentation at some
24 point on how you're going to do sort of A to B to
25 C, particularly how you're going to handle C at

1 that point.

2 My concern also, though, then extends to D.
3 We're -- D would be where you can't do dose
4 reconstruction because you don't have adequate --
5 it's not clear here. This comes up in a later
6 section also, that what the criteria will be, and
7 that one is where we really get, hit the Special
8 Exposure Cohort. We're going to back into
9 Special Exposure Cohorts, but we don't know what
10 that -- how those will be defined or what the
11 process will be.

12 And it makes it very hard to comment on this
13 section of the proposed rule, and it also makes
14 it very hard to address one of your specific
15 questions, particularly -- I think it's question
16 -- the second question regarding the efficiency
17 of the process. Because I think as you get into
18 this -- go down from A to B to C, you're talking
19 about more and more resources going into the
20 effort.

21 And then we get into this issue of the
22 special incidents or whatever or missing
23 information. Really, you're talking about more
24 and more resources being drawn into this process.
25 And at some point it seems to me it makes sense

1 to just stop the resource, the effort, and just
2 put people in a Special Exposure Cohort. If you
3 could short-circuit that in some way.

4 And I'm just having trouble looking at this
5 process not knowing what the way out is, and how
6 much we have to -- how much of an effort we have
7 to put into this rule without knowing that. And
8 I understand the bind that you're in also, so --

9 **MR. ELLIOTT:** You understand the bind we're
10 in? Or do you not understand the bind we're in?
11 I didn't --

12 **DR. MELIUS:** I don't understand well enough
13 for -- I think you should speak to it.

14 **MR. ELLIOTT:** It seems to me that I hope --
15 well, I hope that Kim and Marie caught your
16 language, because it seems to me that's some
17 comment the Board might want to consider adding
18 to their remarks about this rule.

19 Would I have liked to have given you the
20 Special Exposure Cohort guidelines to review
21 today in addition to this? Certainly. Am I able
22 to? No. Suffice it to say that if we can't do a
23 dose reconstruction, then we have the ability to
24 say that's a class of workers that need to be
25 added to the Special Exposure Cohort.

1 Now that's -- I can't predict that that's
2 what you're going to see in these policy
3 guidelines, but that's the only comment I can
4 make at this point.

5 **DR. MELIUS:** Yeah. Just to elaborate, I
6 think from looking at it from this rule, this is
7 a continuum, and that's what we're sort of
8 wrestling with to comment on this part of the
9 rule. That has to be the ultimate part of the
10 continuum, and I think we're having -- I
11 certainly have difficulty commenting until I know
12 where that continuum's going.

13 **MR. KATZ:** Let me -- I'm sorry, Ted Katz
14 here.

15 Just to add to what Larry said just for
16 clarity in the record, though, it's not only can
17 we not do a dose reconstruction, but is there
18 some evidence there that there were substantial
19 exposures? Because clearly you could have a
20 situation where you can't do a dose
21 reconstruction, but the evidence suggests there
22 weren't substantial exposures, and you wouldn't
23 be adding that to the Special Exposure Cohort.

24 **DR. ZIEMER:** Yeah, that's understood, I
25 think. Right.

1 **DR. MELIUS:** You seem to be defining this
2 differently at different points in time,
3 including in your instructions to the
4 contractors, the bidders. I'll show you later.

5 **DR. ZIEMER:** Okay. Let me interject here
6 while we're going through this, and just remind
7 the Board of the three questions. So I want to
8 back you up just briefly to 50978, the right-hand
9 column, comments invited. These are questions
10 similar to those that were developed for the Part
11 81 rule-making.

12 Question one: Does the interim rule make
13 appropriate use of current science for conducting
14 dose reconstructions to be used in an
15 occupational illness compensation program?

16 Question two: Does the interim rule
17 appropriately balance the potential precision of
18 dose reconstructions and the necessary efficiency
19 of the dose reconstruction process?

20 Question three: Does the interim rule
21 implement an appropriate process for involving
22 the claimant in the dose reconstruction?

23 I don't believe we're necessarily limited to
24 those three questions, but as a minimum the staff
25 seeks comments along those lines. And those

1 somewhat parallel the questions we -- not
2 completely, but somewhat parallel what we
3 addressed for the other rule.

4 Now back to section 82.2, are there any
5 further questions or comments on that section?

6 (No responses)

7 **DR. ZIEMER:** 82.3, What are the requirements
8 for dose reconstruction under E-E-O-I-C-P -- how
9 do you pronounce that acronym again?

10 **MS. MURRAY:** EEOICPA.

11 **DR. ZIEMER:** The court recorder knows how to
12 pronounce it. She's the only one that does,
13 because she's saying it into her mike there.

14 Anyway, any questions on that section?

15 (No responses)

16 **DR. ZIEMER:** 82.4, How will Department of
17 Labor use the results?

18 (No responses)

19 **DR. ZIEMER:** Subpart B, Definitions. No
20 questions or comments?

21 (No responses)

22 **DR. ZIEMER:** Subpart C, the Dose
23 Reconstruction Process; 82.10, Overview of the
24 dose reconstruction process.

25 (No responses)

1 **DR. ZIEMER:** Paragraph (a)?

2 (No response)

3 **DR. ZIEMER:** (b)?

4 (No response)

5 **DR. ZIEMER:** (c), concerning interviews?

6 (No response)

7 **DR. ZIEMER:** (d), the NIOSH report

8 summarizing its findings?

9 (No response)

10 **DR. ZIEMER:** (e), concerning the use of

11 information provided by the claimant?

12 (No response)

13 **DR. ZIEMER:** (f), concerning the

14 confirmation of claimant's information?

15 (No response)

16 **DR. ZIEMER:** (g), request of additional

17 records from DOE?

18 (No response)

19 **DR. ZIEMER:** (h), NIOSH review of adequacy

20 of -- and completeness of records provided by

21 DOE? To some extent relates to what we've been

22 discussing here.

23 I have one question on that section. There
24 is a requirement that the Department of Energy
25 certify that record searches have been completed.

1 Is that a simple statement, yes, we've completed
2 the records searches, or what is that
3 certification?

4 **DR. NETON:** Yeah, that's the intent, that
5 they provide some written confirmation that they
6 have searched their records and have completed
7 it.

8 **DR. ZIEMER:** Do you ask them to spell out
9 the extent of that search, where did you look?

10 **DR. NETON:** We direct them to search in
11 certain locations for different types of records,
12 and they would be confirming that they have
13 searched throughout all those archives or
14 inventory of types of records.

15 However, we do intend -- I think somewhere
16 in the rule it specifies that we -- I'm pretty
17 sure it's in here, that we will actually visit
18 certain sites and to confirm, to do sort of a
19 quality control check, if you will, that all
20 available records have been brought forward for
21 that site. So there will be some site visits
22 conducted by NIOSH to help confirm that as well.
23 I don't recall exactly in the rule where that is,
24 but I'm pretty sure we've committed to that.

25 **DR. ZIEMER:** Other questions on (h)?

1 **DR. ANDERSON:** Just a question that came up
2 with an example over lunch, and Department of
3 Labor will make a determination that they were in
4 fact employed at a facility. And the question I
5 have is there may well be, for instance, even
6 internal NIOSH studies that have been done that
7 will have some industrial hygiene or personal
8 badge measurement data, that it's possible the
9 records of employment may have been lost and DOL
10 will up front say, no, we have no record that you
11 were ever employed there; yet searching through
12 somebody else's database you might find that in
13 fact the name appears, that he was interviewed in
14 XYZ study.

15 That's probably a DOL issue. But it would
16 seem to me there may well be some university and
17 research records, that somehow you may want to
18 try to inventory to see if there are lists of who
19 participated in what studies that people might
20 otherwise be lost in the official system, but
21 through other studies would have some indication
22 that they in fact worked there.

23 **MR. ELLIOTT:** It's a -- your point's well
24 taken with us. It is a Labor, Department of
25 Labor requirement, issue; and they have other

1 mechanisms that they're employing -- Social
2 Security account or Administration files,
3 Internal Revenue approach toward verifying
4 employment -- beyond DOE saying we can't seem to
5 find a record for this person.

6 **DR. ZIEMER:** Aside from the employment
7 records, has the staff considered, as far as
8 characterizing the workplace, independent
9 records?

10 For example, records that might be under the
11 purview of state regulatory agencies such as the
12 New York Department of whatever they call it
13 there, the radiation safety folks, or Illinois
14 Department of Nuclear Safety, those folks that
15 might have monitoring records for sites. I'm not
16 referring to the DOE contractor labs per se,
17 because there's no jurisdiction there. But some
18 of the other sites that we might be talking
19 about, the atomic workers and other contractors
20 who might have worked under licenses, and are --
21 at that time AEC licenses, either old AEC
22 records, which now are sort of -- who has those,
23 NRC or DOE?

24 **DR. NETON:** NRC, I believe, would have those
25 records.

1 **DR. ZIEMER:** And other union records --

2 **DR. NETON:** Right.

3 **DR. ZIEMER:** -- what about those?

4 **DR. NETON:** We've considered that approach.
5 In fact, one of our near-term visits will
6 probably be the Nuclear Regulatory Commission to
7 look through, in particular, as you mentioned,
8 for the atomic weapons employers. A license
9 itself will go a long way to establishing the
10 source term.

11 To the extent they have monitoring records,
12 that would be great, although it's my
13 understanding of historical AEC licenses, they
14 typically did not require the monitoring results
15 to be sent to them or held by them. That's my
16 understanding. I'm not saying that's in all
17 cases. But we're certainly going to look through
18 the different avenues, the Nuclear Regulatory
19 Commission, AEC, precursor of the NRC.

20 **DR. ZIEMER:** Thank you.

21 See where we are here; (i), yes.

22 **DR. ANDERSON:** We probably covered this a
23 little earlier, but it talks about may use
24 default values if there's no process for how your
25 -- it gives some examples here and says what they

1 ought to be, but no method as to how you would go
2 about developing those. Or are there existing
3 default values that you --

4 **DR. ZIEMER:** Is it safe to assume that that
5 would appear in the guidelines rather than in the
6 rule-making?

7 **DR. NETON:** Yes, that's correct. And I
8 think the example we talked about earlier is the
9 five micron particle size for ICRP 66, that sort
10 of thing. I'm not sure that we want to commit to
11 the exact default values in the regulation
12 itself.

13 **DR. ANDERSON:** I just -- it ought to --
14 sometime you're going to have to -- and we ought
15 to --

16 **DR. NETON:** Get off the fence, yeah.

17 **DR. ANDERSON:** -- discuss it here, I guess
18 is what I'm saying, at some future meeting. It's
19 probably worth looking at what's out there, what
20 might be appropriate, and us to be able to
21 comment to you on it before you get into having
22 used it and then have it subsequently challenged.

23 **DR. NETON:** Certainly.

24 **DR. ZIEMER:** Item (j), dealing with
25 incomplete records?

1 (No response)

2 **DR. ZIEMER:** Item (k)?

3 **DR. ANDERSON:** Paul?

4 **DR. ZIEMER:** Yes.

5 **DR. ANDERSON:** Just a word that I look for
6 in our state things, is under (j) you have once
7 the resulting data set has been evaluated and
8 validated.

9 Validation tends to be a real difficult
10 thing to do. So I guess the question would be
11 how -- what would you view as validation versus -
12 - you could certainly evaluate it quite easily,
13 but validating measurements, it's pretty tough,
14 especially old -- unless you're going to review
15 the QA/QC program in place at the time. What is
16 your intent here, just -- you may want to look at
17 that word, because it carries a great deal of
18 time and effort.

19 **DR. NETON:** I've developed a new
20 appreciation for the meaning of the word
21 "validated" in the last several months, I'll
22 agree with that.

23 The intent here was to evaluate it, and to
24 validate it in the sense that it accurately
25 depicts the exposure situation, is the intent of

1 that word. Now whether that has special legal
2 meaning beyond that, I guess we'll leave to our
3 legal counsel.

4 **DR. ZIEMER:** Okay, let's move on to Item
5 (k), which has a lot of subparts to it, goes
6 through a step-wise procedure.

7 (No response)

8 **DR. ZIEMER:** Item (l), which deals with the
9 draft dose reconstruction for a claimant?

10 **MS. GADOLA:** I have a question about the
11 compiling of all of this that would fit in with
12 (k) and (l).

13 If, while you're collecting all of the
14 information, if it becomes apparent that there
15 are certain types of cancer that seems to be
16 turning up in certain jobs -- example, if there
17 seems to be a lot of bladder cancer, and it's
18 found in one particular job at four sites, and
19 then there's two other sites where it's extremely
20 low, would this type of information be utilized
21 in determining the validity of maybe the two
22 sites where it's very low? Anybody?

23 **DR. ZIEMER:** Okay, who wishes to answer
24 that? I think that's a question for the staff.

25 **DR. NETON:** I guess I'm not sure of the

1 thrust of the question. The validity of the dose
2 reconstructions, or is it would be advisable for
3 us to turn that over to someone for future
4 epidemiologic research possibly? I'm not --

5 **MS. GADOLA:** Probably both.

6 **DR. NETON:** Yeah.

7 **MS. GADOLA:** I could see where you could do
8 it in the future, but like it would -- it seems
9 like it would cause you to question the validity
10 if you seem like you have a high percentage at
11 the majority of sites for this particular job,
12 and then at two sites it seems extremely low.
13 Would it give you more reason to question the
14 dose reconstruction at these two other sites?

15 **DR. NETON:** I'm not sure. There are a
16 multitude of other exposure agents that we're not
17 evaluating in the dose reconstruction process,
18 particularly the chemicals, exposure to asbestos,
19 that sort of thing. So it would be of scientific
20 interest, but I'm not sure how we would
21 incorporate that into our program of dose
22 reconstruction.

23 **MR. ELLIOTT:** Well, I understand your
24 question better now, I think. And my response to
25 you would be that -- and I think we've talked

1 about this among team discussions we've had --
2 that we would look for those kind of anomalies,
3 where we seem to do dose reconstruction for one
4 site for one type of cancer that seems to result
5 in a propensity for award, and all of a sudden at
6 another site where you've got the same cancer,
7 but we don't see, you know.

8 **MS. GADOLA:** Uh-huh.

9 **MR. ELLIOTT:** So what's going on? Is it the
10 dose?

11 **MS. GADOLA:** Right.

12 **MR. ELLIOTT:** Okay, maybe it is the dose.
13 Maybe this site has distinct internal dose that
14 contributes to that and this other site doesn't.
15 That may be something that the Board wants to
16 take up in its evaluation of dose reconstructions
17 as a way to set your sampling strategy on what
18 you review.

19 **MS. GADOLA:** It does bring up several other
20 questions, and it also reminds us of the amount
21 of data that will be collected during this whole
22 process. And hopefully it can be used in the
23 long term to really give us a better idea of
24 actually what did happen with these people, and
25 what is going to be happening to other people

1 that might be working in similar situations.

2 **DR. ZIEMER:** Jim.

3 **DR. MELIUS:** Yeah. I think following up on
4 that more from, say, the exposure information
5 side, I don't think you've really presented to us
6 how you're going to maintain the data and so
7 forth, and I think we would be interested at a
8 future meeting in hearing about that.

9 But there would be, I think, situations
10 where you're going to learn more about a site or
11 a particular process at a site two years down the
12 road than you know now, so that could possibly
13 change the dose reconstruction for a particular
14 individual who came through earlier. We'd hope
15 it wouldn't be common occurrence, but it might
16 occur. And I think that would be -- I think it's
17 important that there be a data system in place
18 that would allow you to use your past experience,
19 and also, if it is necessary, correct any past
20 errors in reconstructing dose.

21 So I'm assuming you're doing that, but I
22 would be interested in hearing more about it at a
23 later meeting.

24 **MR. ELLIOTT:** We plan to do that, and we've
25 talked with Labor about a feedback loop. When we

1 experience a change in the way we do a dose
2 reconstruction and looking at those claims that
3 went before that, and which of those did not
4 receive an award and reevaluating those under the
5 new dose reconstruction change. And I've noted
6 that you do want a presentation on more on our
7 statistics that we collect and how we monitor and
8 track the claims.

9 **DR. DeHART:** Rather than dose
10 reconstruction, might this not actually represent
11 a change in the risk for that cancer, which goes
12 back into the computerized program, not the dose?
13 Because here, as has already been suggested, you
14 may be dealing with something entirely different
15 from radiation.

16 **DR. ZIEMER:** Can I partially respond to
17 that, Roy?

18 I don't think NIOSH is going to be in a
19 position to be adjusting risk values because
20 you're using -- that data could become available
21 to -- for the database for those who are --
22 you're using NCI risk values, I believe. Is that
23 not correct?

24 **DR. NETON:** Well, it's a combination of --
25 so to a large extent we are. But there are

1 several models that the NCI did not include that
2 we needed, such as a bone cancer model that is
3 included in the NIOSH/IREP.

4 But I would caution the usability of our
5 data for epidemiologic risk modeling, because we
6 are only carrying the dose reconstruction far
7 enough, because of the large volume of cases, to
8 get an answer. If a person falls low or high, it
9 will not necessarily be the exact dose to that
10 person's organ. So the ones that are carried
11 full through the process, of course, would be
12 useable. And the information that Tim provided
13 where we're correcting for a lot of these other
14 exposure scenarios, I have never seen that extent
15 done on an epidemiologic study to really -- to
16 try to determine what the actual organ dose is
17 versus what the badge result is. And there are,
18 as Tim pointed out very well, very distinct
19 differences.

20 **DR. ZIEMER:** I'm going to exercise the
21 Chair's prerogative and declare a comfort break
22 of approximately ten minutes, then we'll
23 reconvene.

24 (Whereupon, a recess was taken from
25 4:05 to 4:16 p.m.)

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DR. ZIEMER: Continuing our review now of the proposed rule-making, we're at subsection (l) on page 50988. Any questions on that section?

(No response)

DR. ZIEMER: Section (m)?

(No response)

DR. ZIEMER: Then section (n), concerning the NIOSH report to DOL?

DR. ANDERSON: Just a question.

DR. ZIEMER: Henry.

DR. ANDERSON: Are you anticipating that under (m) there there'll be a back and forth? Because I can see a 60-day time line for a next of kin who's trying to generate the information you need, they may run into that. So is the --

MR. ELLIOTT: Yes.

DR. ANDERSON: -- to send a form back, they're not going to be -- you have to have a time line at some point, but when will the ticket start to run? So under the first one, it'll be back and forth, and then you'll finally say, well, we think we have -- we haven't heard from you in a while. Here's the form you have to sign saying you're finished.

1 **MR. ELLIOTT:** Well, as (m) says, we have --
2 before we would forward the report on to DOL for
3 final adjudication of the claim, we have to have
4 the claimant's agreement to do that in OCAS-1.

5 **DR. ANDERSON:** Okay.

6 **MR. ELLIOTT:** So we're not going to forward
7 that until we get that. So if we send that -- we
8 had the conversation with the claimant about the
9 final dose reconstruction draft report and we ask
10 them to sign OCAS-1, and they say let me think
11 about all this and get back to you, we're going
12 to follow up with them.

13 **DR. ANDERSON:** Okay.

14 **MR. ELLIOTT:** We can't go forward with it
15 until we have their consent to do so.

16 **DR. MELIUS:** Shouldn't that be more
17 explicit, then? Because that's not the way I
18 read this, was that the fact -- I guess what I'm
19 concerned about is what Henry was saying, is that
20 the person that's trying to provide you with more
21 information, they're next of kin, they're having
22 trouble getting that information. They may have
23 requested it, some additional information they
24 don't think you got from DOE or whatever. And
25 what you're saying is that they're really going

1 back, they haven't really done the final
2 interview -

3 **MR. ELLIOTT:** Yeah, we're not done with them
4 at that point, then.

5 **DR. MELIUS:** Yeah.

6 **MR. ELLIOTT:** We're not -- at that point --
7 I misunderstood your comment. At that point
8 we're not saying sign the OCAS-1 form. We're not
9 trying to force them to do that. We'll still be
10 waiting there for them to produce that
11 information.

12 **DR. NETON:** It says may administratively
13 close the claim. It's not an automatic.

14 I think the intent was to cover situations -
15 - correct me if I'm wrong, Ted -- but a claimant
16 who would just refuse to sign the OCAS-1 form.
17 But I -- they're not signing they agree with the
18 dose assessment, dose reconstruction itself.
19 They're actually signing that we have put forward
20 all of the information that they provided us, and
21 it's included in their claim.

22 Now we may have at some point chose not to
23 use their information for whatever reason, and
24 they can disagree with that. But when they sign
25 the OCAS-1 they're not saying that they agree

1 with the actual dose estimate itself. But if a
2 person says I'm not going to sign it, then we
3 have to have some outlet to close the record.

4 **DR. MELIUS:** Yeah, but wouldn't that then be
5 -- answer this question. Would there be then a
6 notification -- see, up until this point it's
7 sort of an open-ended, back-and-forth process.
8 Now you're suddenly cut him off. I would presume
9 that there would be a notification to them, a
10 formal notification saying, look, we think we've
11 gone as far as we can, blah, blah, blah. Here's
12 the form. We're giving you 60 days. If not,
13 then you have -- we're going to close out the
14 claim.

15 **DR. NETON:** I think that was the intent. Is
16 it in there?

17 **DR. MELIUS:** Is that -- okay.

18 **MR. KATZ:** Sixty days.

19 **DR. MELIUS:** I know that 60 days is in
20 there, but it wasn't clear to me where the
21 process stopped being interactive, and where
22 you're cutting it off.

23 **MR. ELLIOTT:** I think what you're asking,
24 what you're getting at, is do we go back to the
25 claimant with some final correspondence --

1 **DR. MELIUS:** Yeah.

2 **MR. ELLIOTT:** -- saying, okay, we've chosen
3 to exercise our right to administratively close
4 the file --

5 **DR. MELIUS:** Right.

6 **MR. ELLIOTT:** -- and move the dose
7 reconstruction report forward for final
8 adjudication.

9 **DR. MELIUS:** Uh-huh.

10 **MR. ELLIOTT:** And I would -- I don't know if
11 my lawyers are here, but I would think they would
12 weigh in on that and say yeah, we need to have
13 something like that to make that step happen.

14 **MR. KATZ:** Yeah, I mean at the point where
15 we realize -- or it appears that we have a
16 claimant that's simply not going to sign is when
17 we would notify them formally that they have 60
18 days, upon which we will then go ahead and close
19 the claim. So then they would have an additional
20 60 days, in effect, to make a decision to sign
21 the form and let it go forward or not.

22 **DR. MELIUS:** I think what's not captured in
23 all of these going back is that it's sort of a
24 back-and-forth process. It sort of looks
25 sequential here, and it's really not because --

1 or may not be, that there's -- this information
2 goes. And that gets a little bit confusing.
3 It's hard to write the regulations, I think, to
4 capture the back and forth that goes on, but I
5 think it is important. Maybe it's in the
6 preamble and I missed it, but --

7 **DR. ANDERSON:** Yeah, it seems to me in (1)
8 you provide them with a draft of the dose
9 reconstruction. And what I was concerned is you
10 say here it is, you have 60 days to come up with
11 additional information or not; as opposed to we
12 all agree that we have -- you've done the best
13 you can, and now we want to ask you, we need to
14 have your permission to move it forward, and
15 here's the paper that gives the permission,
16 versus you telling them we're done. You either
17 generate something more in 60 days, or it's
18 finished.

19 And that puts the pressure potentially on
20 them to generate data, as opposed to they're
21 saying here's the draft, we're still looking for
22 Uncle Joey. We know he's around somewhere, but
23 we think he's out elk hunting and hasn't come
24 back, and we'll never find him in 60 days.

25 **MR. ELLIOTT:** It appears to me from this

1 discussion we need to make this very clear, what
2 our intent is here for you, and for the claimant.

3 **DR. MELIUS:** Yeah, I think maybe the way to
4 clarify it is that there are two situations. One
5 is where it's a good claim, you just need to move
6 it forward. Second one is where it's really --
7 the dose reconstruction hasn't shown that they
8 have sufficient exposure to warrant the claim,
9 then I think that's where you're going to get
10 into this process. And I think maybe clarifying
11 that in the regulation would be helpful.

12 And I'd almost rather give a little bit more
13 than 60 days, but at some point it depends on how
14 open the previous prior process is. Because I
15 really think there's going to be situations where
16 a next of kin or something is really going to be
17 struggling to try to find someone who knows
18 something that they -- they remember their father
19 telling them something about the plant, and
20 they're trying to find somebody to corroborate
21 that or whatever, and I think that could be a
22 hard process. I think giving them some more time
23 may be better, again, but it shouldn't go on.
24 You shouldn't have to keep the claim open
25 forever, either.

1 **DR. ZIEMER:** The wording here sounds to me
2 to be one in which the claim is not automatically
3 closed after 60 days. It says they may close it,
4 not that they must close it. Is that
5 intentional? And likewise for Department of
6 Labor, they may then close the claim, but it
7 doesn't appear to be mandatory. It seems to be
8 discretionary. They may close the claim.

9 **DR. ANDERSON:** Well, (o) says shall be
10 closed --

11 **THE COURT REPORTER:** Use your microphone,
12 please.

13 **DR. ANDERSON:** -- unless reopened.

14 **UNIDENTIFIED SPEAKER:** Microphone.

15 **DR. ANDERSON:** Yeah, (o) says it shall be
16 closed unless reopened. That's the next item.

17 **DR. ZIEMER:** But that's once the actions in
18 the previous thing are done. Once they do --

19 **DR. ANDERSON:** Yeah.

20 **DR. ZIEMER:** But it doesn't appear that
21 they're required to exercise that prerogative
22 under part (m) or (n), but if they do, then it
23 becomes mandatory. Am I reading that right?

24 **MR. ELLIOTT:** Yes, I think you have the
25 right sense of that, what we intended it to be.

1 **DR. ZIEMER:** Wanda, please.

2 **MS. MUNN:** And in any case, (o) clearly says
3 it still may be reopened. It isn't as though
4 this falls off the end of the earth. There's --
5 if we find Uncle Joe, surely we can come back and
6 the Department of Labor will accept that
7 information.

8 **DR. ZIEMER:** Thank you.

9 Other comments?

10 (No responses)

11 **DR. ZIEMER:** Section 82.11?

12 **DR. DeHART:** A point of clarification.

13 **DR. ZIEMER:** On this section or previous?

14 **DR. DeHART:** On 82.11.

15 **DR. ZIEMER:** 82.11, okay.

16 **DR. DeHART:** If for efficiency we have used
17 a high dose and we see that the claimant has had
18 an experience where it would be awardable, is
19 that considered at that time a reconstruction of
20 the dose? Because it says here you will do a
21 dose reconstruction on every claimant.

22 **DR. NETON:** That's correct, that would be
23 considered a dose reconstruction.

24 **DR. ZIEMER:** Okay. Further questions on
25 that section?

1 **DR. NETON:** It would fall for consideration
2 under the Special Exposure Cohort guidelines,
3 that's correct.

4 **DR. ROESSLER:** Yeah, that makes sense.

5 **DR. NETON:** There may be some low dose
6 situations, but like I say, almost by definition
7 if we feel that it's a low dose scenario, we
8 should be able to demonstrate that the
9 compensation probability is fairly low.

10 **DR. ZIEMER:** Okay, then we go to section
11 82.13, Sources of information for dose
12 reconstructions.

13 (No response)

14 **DR. ZIEMER:** 82.14, Types of information to
15 be used in dose reconstructions.

16 (No response)

17 **DR. ZIEMER:** 82.15, Completeness and
18 adequacy of individual monitoring data.

19 (No responses)

20 **DR. ZIEMER:** I suspect many of the questions
21 have already been answered that pertain to some
22 of these sections.

23 82.16, how will NIOSH -- oh, question. Jim,
24 please.

25 **DR. MELIUS:** I'm a bit slow, I'm back to

1 82.14.

2 **DR. ZIEMER:** Am I moving too fast for you
3 here?

4 **DR. MELIUS:** Well, it's just when there's
5 sort of what appears or attempts to be an
6 exhaustive list, it's hard to figure out what's
7 not there. And maybe this is a question of how
8 you interpret some of this, but yeah, like under
9 (g), information regarding exposure, so on, is
10 there a place there where you talk about getting
11 information from co-workers? And 13, did I --

12 **DR. DeHART:** 82.13 takes care of that.

13 **MR. KATZ:** That's actually -

14 **UNIDENTIFIED:** 82.13?

15 **MR. KATZ:** Yes.

16 **UNIDENTIFIED:** The previous section.

17 **DR. MELIUS:** Okay. Okay, okay.

18 **DR. ZIEMER:** Okay? Then back to 82.15, How
19 will NIOSH evaluate completeness and adequacy of
20 individual monitoring data?

21 (No response)

22 **DR. ZIEMER:** 82.16. Wait, 15, Henry?

23 **DR. ANDERSON:** Well, I'm going back to the
24 dose reconstruction. I was looking for the
25 medical --

1 **DR. ZIEMER:** What section are you at?

2 **DR. ANDERSON:** Under 82.14, is --

3 **DR. ZIEMER:** Fourteen, okay.

4 **DR. ANDERSON:** Is the X-ray machine from the
5 surveillance program somewhere there? I'm just
6 quickly looking.

7 **MR. KATZ:** Yes, it's in there.

8 **DR. ANDERSON:** Okay.

9 **UNIDENTIFIED:** That's (f)(1).

10 **DR. ZIEMER:** Third column.

11 **DR. ANDERSON:** Ah, okay. I see, okay. I
12 took that to be measurements that may have been
13 made in the facility, not in the medical --
14 there's medical screening, I see. Thank you.

15 **DR. ZIEMER:** Yeah, we got it. Thank you.

16 Let's see here, we're back to -- I think we
17 did 15. Sixteen, 82.16, okay.

18 (No response)

19 **DR. ZIEMER:** Seventeen, 82.17. Co-worker
20 data shows up here, too, as well.

21 (No response)

22 **DR. ZIEMER:** 82.18, on calculation of
23 internal dose to the primary cancer site.

24 (No response)

25 **DR. ZIEMER:** 82.19?

1 (No response)

2 **DR. ZIEMER:** Okay, Subpart D, Reporting and
3 Review of the Dose Reconstruction Results; 82.25,
4 When will NIOSH report dose reconstruction
5 results and to whom?

6 (No response)

7 **DR. ZIEMER:** 82.26, How will NIOSH report
8 dose reconstruction results?

9 (No response)

10 **DR. ZIEMER:** No questions, okay.

11 82.27, How can claimants obtain reviews of
12 their dose reconstruction results? No questions?

13 (No response)

14 **DR. ZIEMER:** 82.28, Who can review NIOSH
15 dose reconstruction files on individual
16 claimants?

17 I have one question. I don't know that this
18 would be something that would be in the rule, but
19 is there a plan to provide summary information
20 that's not identified by persons, but the
21 particular claims and or groups of claims,
22 numbers that have been processed and the
23 decisions and so on, or how will that sort of the
24 summary information be made available?

25 **MR. ELLIOTT:** Yes, we intend to provide

1 summary information, and I'll speak about it in
2 two ways.

3 One, statistics like I showed you this
4 morning on number of claims received, where
5 they're at in the process, dose reconstructions
6 completed, DOL will maintain statistics on award
7 versus non-award.

8 Secondly, we talked about technical basis
9 documents that support the implementation
10 guidelines, and summary information from learned
11 experience in dose reconstruction will be
12 incorporated into those and available to the
13 public.

14 **DR. DeHART:** Just to follow one, I would
15 think that the medical literature that could be
16 generated from these studies are critically
17 important, because the assumption is going to be
18 made by some that what you are doing is
19 identifying causation, and that is not
20 necessarily the case. And there needs to be a
21 separation in that through the medical
22 literature, through publication.

23 **DR. ANDERSON:** Yeah, I would -- I think the
24 last sentence there under (b) of researchers will
25 not receive names of claimants is a pretty

1 categorical statement, and it would seem to me
2 you may want to put in without the individual's
3 permission. Because in reality, this is saying
4 if the workers would like to participate in a --
5 or their families, in a research study that would
6 help elucidate the health impacts, and you want
7 to combine this dose reconstruction with a
8 previously-identified cohort, there'll be no
9 linkage.

10 And I think if there's benefit accrues to
11 the individual to at least be offered -- we've
12 received a request, would you be willing to have
13 your whoever it is provided to them, at least
14 give the opportunity of the individual to
15 decline, rather than decline up front in the
16 statute on their behalf, basically saying that
17 these results won't be available linked, so
18 there'd be no way to do a mortality study linking
19 it to specific individuals without their work
20 history.

21 **MR. ELLIOTT:** There's two points to be made
22 in your comment here.

23 One is that -- generally a response here is
24 that the Privacy Act controls how we disseminate
25 information that has personal identifiers on it.

1 This item (b) here that you're speaking from
2 allows researchers who come forward with
3 Institutional Review Board-approved protocol to
4 gain -- that is supported by a NIOSH funding
5 source, either through a grant or a contractual
6 mechanism -- identifiable data through our
7 records, systems of records held under the
8 Privacy Act. So all of the case file information
9 that is incorporated into our systems of records
10 can be released to a researcher with an approved,
11 IRB-approved protocol, okay.

12 If there are researchers out there who have
13 an interest to utilize this information but do
14 not have a NIOSH funding mechanism that brings
15 them into our routine use authority under our
16 Privacy Act system of records, then they would
17 have to approach us for a de-identified data set.

18 **DR. ANDERSON:** See, I -- the way I read it,
19 it says researchers will have limited access,
20 which says not everything, and that's subject to
21 provisions, I agree. But that last sentence
22 basically, to me, defines that limited access
23 means you will not get, and it says researchers,
24 whether they're part of the Privacy Act or not,
25 will not receive names or claimants or covered

1 employees.

2 **MR. ELLIOTT:** This needs to be written
3 better for clarification, because researchers
4 inside NIOSH and researchers supported through
5 NIOSH grants program who have an approved
6 protocol would be eligible to receive
7 identifiable information.

8 **DR. ANDERSON:** Right.

9 **MR. ELLIOTT:** Researchers who are not within
10 that realm would have to request information, but
11 they would be getting a de-identified data set.

12 **DR. ANDERSON:** Right, I'm just saying that
13 the way I read it here. I would interpret this
14 to say --

15 **MR. ELLIOTT:** I can see that.

16 **DR. ANDERSON:** -- since you say it's limited
17 up front, it's limited in that in no case, IRB or
18 not, you won't get it. So I would suggest you
19 might want to reword that, or you'll eliminate
20 all that research.

21 **MR. KATZ:** Yeah, just to clarify intent
22 here, that's helpful. And this provision is here
23 because the Act itself required that we make some
24 provision to provide general information from
25 these to researchers and the public who wouldn't

1 come under our umbrella of the Privacy Act.

2 **DR. ANDERSON:** Then I think you need to say,
3 for those who do not have an IRB approval. I
4 mean, researchers versus the public.

5 **DR. ZIEMER:** Well, clearly it needs to be
6 clarified.

7 **DR. ANDERSON:** Yeah.

8 **MS. KELLEY:** Larry, there is an exception to
9 the Privacy Act or an exemption. An person, an
10 individual can waive their right to privacy for
11 certain conditions. I don't know that that would
12 be something that would be normally done for a
13 large study, but an individual can waive. So if
14 they wanted to make their situation public, I
15 suppose they could.

16 **DR. ZIEMER:** Well, I think Henry's point is
17 this would seem to preclude even that, the way
18 it's written.

19 **DR. ANDERSON:** Yeah.

20 **DR. ZIEMER:** Right.

21 **MR. ELLIOTT:** That's true, Alice, but I want
22 to make sure everybody understands. We are not
23 seeking from claimants, from the Energy employee
24 or their survivor who's filing a claim, a release
25 of such sort. We're not making that a matter of

1 practice or policy.

2 **DR. ZIEMER:** Okay. Then it appears that we
3 have completed the sort of overview review of the
4 document.

5 I am going to propose that we have a working
6 group that could prepare some preliminary
7 statements for us, even this evening, statements
8 that could be presented publicly tomorrow so that
9 we don't get into the kind of bind we had before
10 in having to do a document sort of off-line and
11 by e-mail and so on.

12 And so I would like to seek volunteers again
13 who -- and it could be a few or all, but if I had
14 three or four folks who believe they have enough
15 energy this evening to make an early stab at some
16 wording, at least in answering the three
17 questions. And we can certainly add a couple of
18 other things, such as the point that Henry just
19 made on that clarification. I think, Jim, you
20 had another point earlier that I don't recall
21 what it is, but a couple of those comments would
22 be appropriate to add as sort of general
23 comments. And then try to address the three
24 questions.

25 So are there those who are just anxious to

1 draft this? I know everyone's avoiding making
2 eye contact.

3 **DR. DeHART:** Some of us would like to get
4 home in the evening tomorrow, since it is
5 February the 14th.

6 **DR. ZIEMER:** Yeah, there -

7 **DR. DeHART:** It's already costing me.

8 **DR. ZIEMER:** Right. Make good eye contact
9 and we'll help you out.

10 Larry has a suggestion here.

11 **MR. ELLIOTT:** We are ahead of our agenda, to
12 a certain extent. I suggest to you that you
13 might be able to do this tomorrow morning. If
14 individually you --

15 **DR. ZIEMER:** If everyone's too tired.

16 **MR. ELLIOTT:** Yeah, if individually somebody
17 wanted to work on their comments and bring them
18 forward in the morning, we could work together on
19 them tomorrow morning.

20 **DR. ZIEMER:** Let me ask the group, because
21 this has been a long day. I don't want to overdo
22 it, but if you'd rather give some thought and
23 maybe jot down, rough out some ideas tonight, and
24 then we'll get them on the table tomorrow and
25 have a chance to work through them, I think we

1 would have, time-wise have the opportunity
2 because we are a bit ahead of schedule.

3 **UNIDENTIFIED:** (Inaudible)

4 **DR. ZIEMER:** I'm sorry?

5 **UNIDENTIFIED:** That's an off-the-record
6 comment.

7 **DR. ZIEMER:** Jim.

8 **DR. MELIUS:** Yeah, I would agree that doing
9 it tomorrow morning, I think, would make more
10 sense. I think if we got some general discussion
11 going about the sort of generalities, then I
12 think it's a lot easier to come to agreement on
13 specific statements at that point.

14 But I guess it would be helpful if we
15 clarify the schedule issue, though, before we
16 adjourn, because there's issues related to public
17 comment and so forth. Are we planning on meeting
18 for the whole day tomorrow, or is there --

19 **DR. ZIEMER:** Our main job tomorrow is to
20 develop these comments. And to the -- and
21 basically we are already at least an hour ahead
22 of schedule because we just completed doing what
23 we had scheduled for the 9:15 hour tomorrow, and
24 we have basically blocked off also two additional
25 hours in the afternoon. So there's -- really the

1 bulk of the time tomorrow was set down for this
2 very task, so we certainly can pick it up first
3 thing in the morning and get it underway.

4 **DR. MELIUS:** I would just add that maybe we
5 want to move up the public comment period if we
6 think we might finish earlier, do that around
7 lunchtime, either before or after lunch.

8 **DR. ZIEMER:** Yes. Although in fairness,
9 since the agenda was publicly promulgated and
10 some of the public may have scheduled themselves
11 to be here at that time, we would still need to
12 allow a public comment period at that point. But
13 we can certainly entertain public comments
14 earlier as well, sure.

15 Henry.

16 **DR. ANDERSON:** Just as we talk about
17 drafting here, I'm just wondering do we want to
18 have a brief discussion now, or do we want to
19 recommend in this rule, as we did in the previous
20 one, a role for the Board? I notice in the
21 preamble again it talks about the role of the
22 Advisory Board in reviewing --

23 **DR. ZIEMER:** Right. We actually sort of
24 referred to that earlier, and then the idea that
25 we would probably do something similar in

1 codifying --

2 **DR. ANDERSON:** I think it's a good idea.

3 **DR. ZIEMER:** -- codifying the Board's role
4 there.

5 Larry.

6 **MR. ELLIOTT:** Along that line, I would call
7 your attention to the agenda item tomorrow
8 morning, 10:30 to 11:30, to discuss the Board
9 work schedule.

10 We need to make a decision tomorrow about
11 our tentative meeting date of March 25th and
12 26th, and what we would have as an agenda if we
13 want to go ahead and hold that meeting that date.
14 If not, then what would look like the next best
15 available date for us to meet. I'm not sure that
16 we can guarantee that we're going to have the
17 Special Exposure Cohort guide, petitioning
18 guidelines available by March, so we need to talk
19 in terms about that.

20 **DR. ZIEMER:** Okay. So that's an issue.
21 Again, you can cogitate on that this evening and
22 be ready to discuss that also in the morning.

23 **DR. MELIUS:** Be up all night.

24 **DR. ZIEMER:** Yes. Any other -- is that
25 agreeable? Any other comments?

1 (No response)

2 **DR. ZIEMER:** Do I take it, then, that by
3 consent that you're prepared to work on your own
4 this evening to the extent you're able, and come
5 prepared to work through this tomorrow morning?
6 And if we can finish earlier in the day that will
7 be fine, and those that need to leave will be
8 able to do so.

9 Everybody's making eye contact. I take that
10 as a definite plus, okay. Yes, let's do that.
11 That sounds great, okay. If that's agreeable,
12 and it appears to be, then we'll be in recess
13 until tomorrow morning. Thank you very much.

14 (Whereupon, the meeting was
15 adjourned at 4:50 p.m.)

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