

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

convenes the

WORKING GROUP MEETING

ADVISORY BOARD ON
RADIATION AND WORKER HEALTH

MOUND

The verbatim transcript of the Working
Group Meeting of the Advisory Board on Radiation and
Worker Health held in Cincinnati, Ohio, on July 14,
2008.

STEVEN RAY GREEN AND ASSOCIATES
NATIONALLY CERTIFIED COURT REPORTERS
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TRANSCRIPT LEGEND

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In the following transcript: a dash (--) indicates an unintentional or purposeful interruption of a sentence. An ellipsis (. . .) indicates halting speech or an unfinished sentence in dialogue or omission(s) of word(s) when reading written material.

-- (sic) denotes an incorrect usage or pronunciation of a word which is transcribed in its original form as reported.

-- (phonetically) indicates a phonetic spelling of the word if no confirmation of the correct spelling is available.

-- "uh-huh" represents an affirmative response, and "uh-uh" represents a negative response.

-- "*" denotes a spelling based on phonetics, without reference available.

-- (inaudible)/ (unintelligible) signifies speaker failure, usually failure to use a microphone.

P A R T I C I P A N T S

(By Group, in Alphabetical Order)

DESIGNATED FEDERAL OFFICIAL

WADE, Lewis, Ph.D.

Senior Science Advisor

National Institute for Occupational Safety and Health

Centers for Disease Control and Prevention

Washington, DC

MEMBERSHIP

BEACH, Josie

Nuclear Chemical Operator

Hanford Reservation

Richland, Washington

1
2
3

CLAWSON, Bradley

Senior Operator, Nuclear Fuel Handling

Idaho National Engineering & Environmental Laboratory

PRESLEY, Robert W.

Special Projects Engineer

BWXT Y12 National Security Complex

Clinton, Tennessee

SCHOFIELD, Phillip

Los Alamos Project on Worker Safety

Los Alamos, New Mexico

IDENTIFIED PARTICIPANTS

ALVAREZ, BOB, SC&A
BRACKETT, LIZ, ORAU
BUCHANAN, RON, SC&A
CHANG, CHIA-CHIA, NIOSH
CHEW, MEL, ORAU
DEMERS, KATHY, SC&A
ELLIOTT, LARRY, NIOSH
FITZGERALD, JOE, SC&A
GIBSON, MICHAEL, ABRWH
GILLIAMS, COZELL, NIOSH
HOFF, JENNIFER, ORAU
HOMOKI-TITUS, LIZ, HHS
LABONE, TOM, ORAU
LIPSZTEIN, JOYCE, SC&A
MAURO, JOHN, SC&A
POTTER, GENE, ORAU
RAFKY, MICHAEL, HHS
RICH, BRYCE, ORAU
SHARFI, MUTTY, ORAU
STEWART, DON, MOELLER AND ASSCS.
ULSH, BRANT, NIOSH

P R O C E E D I N G S

(9:30 a.m.)

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22WELCOME AND OPENING COMMENTSDR. LEWIS WADE, DFO

MS. BEACH: Good morning, this is Josie Beach from the Mound working group. Thank you for your patience this morning while we got started a little late.

Lew, I'm going to go ahead and turn the microphone over to you to start.

DR. WADE (by Telephone): Thank you, Josie.

This is Lew Wade, and I'm acting as the Designated Federal Official for this work group. I would also note for the record that Brant Ulsh, a federal employee, is in the work group meeting room.

Is that correct, Brant?

DR. ULSH: Yes, I'm here.

DR. WADE (by Telephone): So we have a federal official also in the work group if for any reason I was to lose contact with this call. I would also inquire before we begin, do we have a member of OGC on the line as well?

1 (no response)

2 **DR. WADE (by Telephone):** A member of the
3 Office of General Counsel?

4 (no response)

5 **DR. WADE (by Telephone):** We don't need a
6 member of OGC. As a courtesy I was asking if
7 there was one present. I'll ask again before
8 we conclude our introductions.

9 Ray, are you up and running?

10 **THE COURT REPORTER:** Yes, sir.

11 **DR. WADE (by Telephone):** Great. This is a
12 meeting of the Mound work group. This is a
13 work group on the special exposure cohort as
14 it relates to the Mound site, and the chair of
15 that work group is Josie Beach.

16 Josie, you're in the room?

17 **MS. BEACH:** Yes, I am.

18 **DR. WADE (by Telephone):** Phillip Schofield
19 is a member.

20 Phillip, are you with us?

21 **MR. SCHOFIELD:** Yes, I am.

22 **DR. WADE (by Telephone):** Present in the
23 room?

24 **MR. SCHOFIELD:** Yes.

25 **DR. WADE (by Telephone):** Robert Presley

1 present in the room?

2 **MR. PRESLEY:** Yes, sir.

3 **DR. WADE (by Telephone):** Brad Clawson
4 present in the room?

5 **MR. CLAWSON:** Yes.

6 **DR. WADE (by Telephone):** Dr. Ziemer is
7 listed as an alternate on this work group. Is
8 Dr. Ziemer involved in the call or present in
9 the room?

10 **MS. BEACH:** Lew, he did indicate he would
11 not be available today.

12 **DR. WADE (by Telephone):** Good. Are there
13 any other Board members who are either in the
14 room and on the call who have not yet been
15 identified?

16 (no response)

17 **DR. WADE (by Telephone):** Any other Board
18 members?

19 **MR. GIBSON (by Telephone):** This is Mike
20 Gibson, Board member. I am conflicted, and
21 I'm listening in as a member of the public.

22 **DR. WADE (by Telephone):** Okay, thank you,
23 Michael.

24 Any other Board members participating
25 who have not yet identified themselves?

1 (no response)

2 **DR. WADE (by Telephone):** Okay, we do not
3 have a quorum of the Board, and that's
4 appropriate for a work group meeting, so we
5 can begin.

6 Before I do the introductions, let me
7 do a very brief explanation as to a part of
8 the confusion for this morning with apologies
9 to everyone who's been impacted by it. But
10 the situation at NIOSH is that John Howard,
11 our very able leader, has completed his six-
12 year term as of last Friday. Whether or not
13 John will be reappointed still remains to be
14 seen. There's much speculation about that,
15 but starting this morning, Dr. Christine
16 Branche is acting as the NIOSH Director, and
17 therefore, Christine could not be on this
18 call.

19 Chia-Chia Chang from Christine's staff
20 is en route, but her plane was delayed, and
21 Chia-Chia should arrive there before too long.
22 Rather than wait until the originally delayed
23 time of 10:45, I stepped in to let us start a
24 bit early because I didn't want to be
25 disrespectful of the time of the Board

1 members, the work group members who are
2 already assembled. So with apologies to the
3 little bit of a hiccup this morning, but
4 there's no reason we shouldn't be able to
5 continue smoothly from here.

6 Let me ask for other members of the
7 NIOSH or ORAU team who are in the room or on
8 the call to identify themselves.

9 **MR. ELLIOTT (by Telephone):** This is Larry
10 Elliott, Director of OCAS. I'm not conflicted
11 at Mound.

12 **DR. WADE (by Telephone):** Hi, Larry.

13 Other NIOSH/OCAS -- excuse me,
14 OCAS/ORAU team members present.

15 **MR. STEWART:** I'm Don Stewart from Dave
16 Moeller and Associates. I am not conflicted
17 at Mound.

18 **MR. CHEW:** I'm Mel Chew from the O-R-A-U
19 team. I am not conflicted with Mound.

20 **DR. ULSH:** Brant Ulsh from OCAS, no conflict
21 with Mound.

22 **MS. HOFF:** Jennifer Hoff with the ORAU team,
23 not conflicted with Mound.

24 **MS. BRACKETT (by Telephone):** Liz Brackett
25 with the ORAU team. I am conflicted at Mound.

1 **DR. WADE (by Telephone):** Other members of
2 the extended NIOSH/ORAU family.

3 **MR. SHARFI (by Telephone):** Mutty Sharfi,
4 ORAU team, conflicted at Mound.

5 **MR. RICH:** Bryce Rich, O-R-A-U team,
6 conflicted.

7 **MR. POTTER (by Telephone):** Gene Potter,
8 ORAU team, not conflicted.

9 **DR. WADE (by Telephone):** Welcome, Gene.
10 Other members of the NIOSH/ORAU team.

11 **MR. LaBONE (by Telephone):** Good morning,
12 this is Tom LaBone, ORAU team. I'm
13 conflicted.

14 **DR. WADE (by Telephone):** Anyone else,
15 NIOSH/ORAU team?

16 (no response)

17 **DR. WADE (by Telephone):** How about SC&A?

18 **MR. FITZGERALD (by Telephone):** This is Joe
19 Fitzgerald. I'm not conflicted.

20 **DR. MAURO (by Telephone):** John Mauro, not
21 conflicted.

22 **MS. DeMERS:** This is Kathy Robertson-DeMers,
23 and I'm conflicted.

24 **MR. ALVAREZ (by Telephone):** Bob Alvarez,
25 not conflicted.

1 **MR. BUCHANAN (by Telephone):** This is Ron
2 Buchanan, not conflicted.

3 **MS. BEACH:** Ron Buchanan.

4 **DR. LIPSZTEIN (by Telephone):** Joyce
5 Lipsztein, not conflicted.

6 **DR. WADE (by Telephone):** Good morning,
7 Joyce.

8 **DR. LIPSZTEIN (by Telephone):** Good morning.

9 **DR. WADE (by Telephone):** Other members of
10 the SC&A team?

11 (no response)

12 **DR. WADE (by Telephone):** Do we have other
13 federal employees who are working on this
14 call?

15 **MS. HOMOKI-TITUS (by Telephone):** Good
16 morning, Lew, this is Liz Homoki-Titus with
17 HHS.

18 **DR. WADE (by Telephone):** Good morning, Liz.
19 We asked for you earlier. We knew you would
20 join us.

21 **MS. HOMOKI-TITUS (by Telephone):** Thank you.

22 **MR. RAFKY (by Telephone):** This is Michael
23 Rafky, also from HHS.

24 **DR. WADE (by Telephone):** Welcome, Michael.
25 Other working federal employees?

1 **MS. GILLIAMS (by Telephone):** Good morning,
2 this is Cozell Gilliams standing in for Zaida
3 Burgos. I wanted to make sure that certain
4 participants were in attendance, and they are.
5 I am disconnecting at this point.

6 **DR. WADE (by Telephone):** Thank you.

7 Other federal employees?

8 (no response)

9 **DR. WADE (by Telephone):** How about members
10 of Congress or their representatives?

11 (no response)

12 **DR. WADE (by Telephone):** What about
13 workers, petitioners, their representatives?

14 (no response)

15 **DR. WADE (by Telephone):** Anyone else who
16 would like to be identified associated with
17 the Mound site?

18 (no response)

19 **DR. WADE (by Telephone):** Anyone else at all
20 who would like to be identified for the record
21 as being on this call?

22 (no response)

23 **DR. WADE (by Telephone):** The last chance to
24 get your name in the record.

25 (no response)

1 **DR. WADE (by Telephone):** Okay, Josie, it's
2 all yours.

3 **WELCOME, ADMINISTRATIVE COMMENTS, AGENDA ADDITIONS OR**
4 **REVISIONS**

5 **MS. BEACH:** All right, Lew. Once again I
6 want to thank you for stepping in and allowing
7 us to start our meeting a bit earlier than
8 what was anticipated.

9 **DR. WADE (by Telephone):** My pleasure. It's
10 like old times.

11 **MS. BEACH:** Yes, it is, and I appreciate it.

12 First of all I want to direct your
13 attention to the agenda. It is posted on the
14 website. For those of you that don't have it
15 in front of you, you can look there. The only
16 thing that's changing with the agenda unless I
17 hear from somebody else is everything is one-
18 half hour later than what was posted on the
19 original agenda. So any changes that anybody
20 -- we'll get you one.

21 **EXTERNAL DOSE FOR INTEGRITY/COMPLETENESS,**
22 **MATRIX #14-19**

23 At this point then we will start with
24 "External dose for integrity and completeness,
25 Matrix number 14 through 19." And I believe
we're going to start with SC&A.

1 **MR. FITZGERALD (by Telephone):** Yes, thank
2 you.

3 This is Joe Fitzgerald. Ron Buchanan
4 is only available for the morning, so we
5 thought we would go ahead and discuss this in
6 this particular session. And before turning
7 to Ron, I think our issue -- and this is not
8 just 14, but a number of these issues that
9 deal with the neutron dose estimations -- go
10 to the same question which is the ability to
11 rely on NTA film information given the energy
12 dependence of NTA film. This is not a new
13 issue. In fact, this is a pretty generic
14 question that's been raised at other sites.

15 What concerns us is that the kind of
16 measurements that would give some sense of
17 what the spectrum is suggests that there's
18 certainly a number of neutron sources below
19 the threshold for the NTA film that may be
20 missed. And the question is can one still
21 come up with a dose estimation? So starting
22 with 14 I think we want to hone in on that
23 particular point and get maybe some response
24 from NIOSH and the ORAU team that would
25 clarify that.

1 Ron, do you want to -- I think we can
2 summarize what we believe we read in the NIOSH
3 response, and certainly, Brant, NIOSH can
4 correct us if we get the interpretation wrong
5 from this last set of responses. And then we
6 can give you our take at this point.

7 **MR. BUCHANAN (by Telephone):** This is Ron
8 Buchanan of SC&A. And the issue 14 and 15 are
9 separated in the matrix because of the
10 response in the evaluation report by NIOSH,
11 but they are very closely tied.

12 And I want to start off briefly by
13 explaining the problem so that we can see what
14 is needed to solve the problem and the reason
15 that SC&A thinks perhaps that it could be an
16 accuracy problem in assigning neutron dose at
17 Mound. And so just briefly, 14 and 15 refer
18 to the neutron energy spectrum at Mound. And
19 in the earlier days they used polonium sources
20 which had a fairly high energy, four-and-a-
21 half meV or so.

22 And then they started working with
23 plutonium sources in the '60s which was more
24 like a 1.3 meV. And what we would like to
25 know is how NIOSH would propose reconstructing

1 the dose because of the following problems:
2 As most of you know, NTA film decreases its
3 response very rapidly when you get down around
4 a half, 0.7 meV, and so neutrons below that
5 energy aren't registered. And the ones around
6 that energy and above it fade with time
7 depending on when the film is read after the
8 exposure occurs.

9 And so initially the polonium sources
10 put out a fairly high energy neutron, four-
11 and-a-half meV. It gets degraded and in the
12 evaluation report, it was stated initially
13 that there was the high energy neutrons, and
14 then later on in the report it stated that
15 there was degraded neutrons. And so this
16 would cause a problem in the calibration.

17 Originally, it was calibrated with
18 polonium source and that would create a
19 problem in that in the work environment, the
20 neutrons are rapidly degraded. And so the
21 person wearing the badge would receive dose
22 which wouldn't be registered on the NTA film.

23 And then later on it was switched to a
24 plutonium calibration source which has that
25 1.3 meV energy, and additionally, the same

1 thing would happen. The worker in the field
2 would be exposed to neutrons below the 0.7 or
3 0.5 meV threshold, and it wouldn't be
4 registered.

5 Now the problem is you really don't
6 know what the spectrum is out there in the
7 work area as a function of location process
8 and changes over time. And so you have to
9 have some sort of absolute neutron measurement
10 out there to compare your NTA film to before
11 you can do a direct dose assignment.

12 And so now if you read through TBD-6,
13 they make several statements about adjustment
14 to the dose, Meyers and such in his
15 recollection and his documentation state some
16 of that was done. And I want to briefly cover
17 that that let's you know what was done and
18 what wasn't done.

19 I cannot find that there was any
20 absolute NTA measurements done simultaneously
21 with a neutron method such as rim balls and/or
22 tissue equivalent proportional counter to say,
23 okay, tintrac* is equal to a certain ^ dose
24 out in the workplace. Now NIOSH has said that
25 there is some --

1 **MS. BEACH:** Ron, Ron --

2 **MR. BUCHANAN (by Telephone):** -- new data
3 that they're looking at, but I have not seen
4 that data.

5 **MS. BEACH:** Ron, could I stop you for just a
6 moment. I'm going to take a page out of
7 Christine's book and ask those of you that are
8 on the phone and are not speaking to please
9 mute your phone. We can hear sneezing, and it
10 is very disruptive. Thank you.

11 Sorry, Ron.

12 **MR. BUCHANAN (by Telephone):** And so what we
13 want to do is to, what we need to do is to see
14 if there's any absolute neutron measurements
15 to compare the NTA film to. Now, in the
16 Meyers documents he does talk about the fact
17 that they found the polonium source and the
18 plutonium source gave about a factor of 2.3
19 difference in calibration so they made some
20 adjustment or should make some adjustment at
21 that period.

22 And then in 1970 to '76 they found
23 that fading was a problem, and they adjusted
24 the dose by a factor of two. Now, I cannot
25 really find in the, looking at the MESH

1 database and the old handwritten records I
2 could find in documentation, I cannot see that
3 that was done directly. Now, there might be
4 evidence that was done. I could not really
5 see it except in the MESH database they have
6 neutron dose, and then they have another file
7 called Double Neutron Dose.

8 And that affects only 1970 to '76 is
9 fading. And so that information is there.
10 And the dose reconstructions I've looked at do
11 use the double neutron dose during '70 to '76
12 to correct for fading during that period.

13 **MR. STEWART:** Ron? Does or does not use the
14 double dose?

15 **MR. BUCHANAN (by Telephone):** They do use
16 the neutron double dose in the few claims I
17 looked at.

18 So where SC&A is at at this point,
19 like I say, the neutron spectrum measurements
20 that we could find in the documents, I found
21 four or five from 1963 to 2001. And the
22 spectrum measurements, there wasn't much
23 detail on how it was done. One of them was
24 done with two rem balls that I did find which
25 doesn't give you a very fine tuning. And the

1 average energy range ran from 0.5 to 1.2 meV
2 with the average about 0.3 -- excuse me, 0.8
3 meV.

4 And I'd like to point out that if you
5 have an average energy of around say 0.8 meV
6 or 1 meV, and you're calibrating with 1.3 meV
7 neutron source, you're going to register low
8 because that's going to skew your whole
9 spectrum down. More of it's going to fall
10 below the threshold of the NTA film. It's
11 going to miss it.

12 And unfortunately, if the average
13 energy was 1.3 or above, you would be on or
14 slightly claimant favorable. When you start
15 scooting down to 0.8, 0.9, 1 meV, a lot of
16 that tail's going to fall below the threshold,
17 and you're going to have a low dose registered
18 on your NTA film. And so that's the point
19 that we're at now is that we have not seen the
20 neutron energy spectrum that they have talked
21 about other than the few I could find which
22 were fairly low energy.

23 And then also if you're not going to
24 use the NTA film results, the other option is
25 using the neutron over photon value that you

1 assign a certain N-over-P value, multiply your
2 photon dose by that and assign neutron dose.
3 And that's been done at some of the sites.

4 However, of course, the TBD did not
5 address that in any detail, and I understand
6 that NIOSH has some N-over-P values that have
7 come up since December or so. And we have not
8 seen them. We don't know how they were
9 measured or where or when, but you would need
10 measurements done by something other than NTA
11 film because you can't correct NTA film with
12 NTA film.

13 And then you would need it as a
14 function of location and time because the
15 workers at different locations, different
16 times and exposed to different neutron
17 spectrums employing different neutron-to-
18 photon ratios to do that. So that's where
19 SC&A is at right now. And so I guess at this
20 point we could open it up for discussion.

21 **DR. ULSH:** This is Brant Ulsh from NIOSH.
22 Thanks for that summary, Ron. We understand
23 the issue with, I think you mentioned two
24 issues. One is the neutron energy spectrum,
25 and the second one that you briefly touched on

1 was fading.

2 Not only are we aware of it, but the
3 Mound health physics staff appear to be aware
4 of it, too. If you look at the document, I
5 think it's called "History of Neutron
6 Monitoring at Mound" or something close to
7 that. I don't have it right in front of me.
8 They explicitly talk about at least the fading
9 issue. I'm pretty sure they talk about the
10 neutron spectrum issue.

11 In addition, I've got Don Stewart in
12 the room, and he's going to talk a little bit,
13 in a little bit more detail after I'm done.
14 But as you noted, in terms of the energy
15 spectrum they started using plutonium in the,
16 I think the '60s, maybe the late '50s, but
17 they really got hot and heavy into it in the
18 '60s. And that does have a lower, unmoderated
19 energy than the polonium.

20 But we explicitly talked about in the
21 evaluation report that we are well aware of
22 the degraded neutron energy spectrum. The way
23 that it's been done at other sites, for
24 instance, at Y-12, is you simply apply a
25 correction factor to account for the fraction

1 of the neutrons that are below the NTA
2 threshold.

3 You're correct if they used an
4 unmoderated source to calibrate that you might
5 be underestimating the neutron dose the
6 workers would experience in the field. But I
7 know at least at, well, the sites that I know
8 of, I'm thinking specifically of Rocky Flats.
9 They didn't just use a bare, unmoderated
10 source. They used varying degrees of
11 moderation in their calibrations. Now, I
12 don't know if they did that at Mound off the
13 top of my head. We'd have to check on that.
14 But it would be surprising if they didn't.

15 Also, there's an extensive set of
16 neutron energy spectrum measurements. I'm
17 looking at Don for confirmation. Yes, yes,
18 there are. And perhaps Don can give you some
19 more details on that. So the kinds of things
20 that you indicated you would like to see in
21 terms of neutron energy spectrum measurements,
22 they do exist, and we do have them.

23 You are correct that we are also,
24 well, we plan to rely on NTA film, not
25 primarily on an n/p ratio, although we are

1 pursuing an n/p ratio as well. We have paired
2 neutron and photon measurements for different
3 gloveboxes in the different lines, and the SM
4 and PP Buildings, a few I think in Building
5 50.

6 And Don can give you some more details
7 there, but that's strictly as a backup. The
8 primary line of estimating neutron dose is
9 going to be the NTA film. I know that we've
10 done similarly to the way it's been done at
11 other sites.

12 Don, do you want to give some more
13 details?

14 **MS. BEACH:** Before you start, Don, Brant,
15 you mentioned a paper "The History of --

16 **DR. ULSH:** Yes, it's --

17 **MS. BEACH:** What's the name of that again?

18 **DR. ULSH:** It's referenced in the evaluation
19 report. I think it's called "History of
20 Neutron Monitoring at Mound" or something like
21 that.

22 **MR. STEWART:** It's in the site records
23 database.

24 **DR. ULSH:** I'll tell you what, while Don's
25 talking I'll try to find it.

1 **MS. BEACH:** Thank you.

2 **MR. STEWART:** Just starting with the fading
3 issue, Mound was aware of this issue, and they
4 began in 1968 to apply a protocol when they
5 developed the NTA films to correct for track
6 fading depending on how, on the film's last
7 exposure and the date of processing. So we
8 may have a gap there. We'll need to go back
9 and apply similar corrections to data related
10 to plutonium prior to that date. I believe it
11 was the middle of 1968. So track fading was
12 addressed by the Mound people.

13 We are preparing a document that
14 discusses a number of neutron/photon ratios
15 based on periodic measurements made through a
16 fairly long, significant portion of the
17 history of the SM and PP Buildings. We will
18 use that n/p ratio primarily to assign missed
19 dose rather than to apply unmonitored dose
20 because our position is that most workers or
21 all workers at Mound were monitored for the
22 areas that they worked in. We don't see a lot
23 of personnel who claim exposure who do not
24 have dosimetry records. And I believe SC&A
25 has found that to be the case as well.

1 **DR. ULSH:** Well, I would also note, Ron --
2 this is Brant Ulsh again -- as you mentioned,
3 when you look in the dose reconstructions for
4 1970 to '76, we did use the double the neutron
5 dose, and that's noted on your spreadsheet on
6 the Findings tab, column B-27. One hundred
7 percent of the MESH neutron dose values for
8 '70 to '76 were correctly entered as two times
9 the original. I believe that the reason for
10 that --

11 Was that fading, Don, or was that
12 spectral issues?

13 **MR. STEWART:** I believe that primarily
14 spectral issues at that time. And it, the way
15 the memos read, they had recorded those doses
16 and committed to double those doses when the
17 records were transposed or moved to another
18 database, and that happened and they were
19 entered in the MESH as I understand it. Mutty
20 can correct me if I'm wrong there.

21 **MR. BUCHANAN (by Telephone):** This is Ron
22 Buchanan. Yes, apparently, the MESH database,
23 they entered the original neutron dose and
24 then they doubled. They had a separate file
25 with double neutron doses. And according to

1 the TBD-6, this was due to fading. Now,
2 whether that's correct or not, I don't know,
3 but TBD-6 does say that that was due to fading
4 as opposed to ratio.

5 **DR. ULSH:** And I think that was mainly in
6 the PP Building because they had additional
7 shielding in PP Building that would knock down
8 the neutron energy spectrum. Before they
9 moved into PP Building, they had much less
10 shielding in the SM Building.

11 And in addition, they were working
12 with, as you mentioned, polonium in the early
13 days, so you had a much higher energy,
14 starting energy so the fading issue was less.
15 But they did also work with Plutonium-238.

16 The only time you would have a fading
17 issue though is if the calibration films are
18 treated differently than the films that are
19 worn in the field. If you examine that, the
20 calibration films over time, the time period
21 that you would exchange and read the ones on
22 the film, it's all going to come out in the
23 wash. And we have every indication that
24 that's exactly what they did at Mound.

25 So you're right that there is a

1 fraction, there is going to be some fading,
2 but that's accounted for in the way they
3 handled calibration films. You're also
4 correct that there's a fraction of the neutron
5 energy spectrum that is below the NTA
6 detection limit, but again, that was accounted
7 for with spectral measurements which I
8 understand you guys haven't seen those. We
9 will provide those to you.

10 **MR. BUCHANAN (by Telephone):** Okay, now, on
11 the track fading, I would like to emphasize
12 that before 1968 there does not appear to be
13 any correction for track fading. From the
14 start of NTA film about 1950, they did do a
15 measurement in '51, but nothing became of it.
16 As far as I can find, July of 1968 they
17 started doing the one week-, two week-, four
18 week-type thing. And then in 1970 to '76 they
19 did a two times correction factor. So we
20 still have the '50 to '68 timeframe where
21 fading is still unaddressed.

22 Now, I realize this wouldn't be as big
23 a problem with your polonium sources as it was
24 with your plutonium sources; however, that
25 fading was not addressed during that period of

1 time in any document I can find. And so that
2 would be a large issue during the earlier
3 times. I don't know, it depends on the energy
4 spectrum in the work area.

5 **MR. STEWART:** Plutonium began to enter into
6 the source term in the late '50s in small
7 amounts, usually weapons-grade-related stuff.
8 Later in the early '60s it began to be a
9 production issue with the PU-238 sources. So
10 there is a gap there. At some point they did
11 not account for fading, and that is an issue
12 that is currently under review for the
13 revision of this TBD.

14 **DR. ULSH:** But again, I think I would
15 propose that this is more of a TBD issue.
16 It's a matter of what you multiply the neutron
17 dose by. Is it two? Is it zero, or not zero.
18 Is it one because they've already accounted
19 for it? Is it two because they haven't? I
20 don't see, it can't be infinite. I don't
21 think it's an SEC issue. I think it's a TBD
22 issue. That doesn't mean it's not important,
23 but I would put it in the TBD issue.

24 **MR. BUCHANAN (by Telephone):** I would agree
25 if the amount of neutron below the threshold

1 can be accounted for by some other absolute
2 neutron measurement or can be shown to be
3 fairly insignificant. At this point I think
4 that's where the SEC issue comes in is that we
5 don't know at this time that it can be
6 accurately, with sufficient accuracy, assign
7 the neutron dose in the NTA film until we see
8 how that would be done.

9 **MR. FITZGERALD (by Telephone):** And, Ron,
10 this is Joe. It sounds like if one could see
11 the spectral measurements, which is what Brant
12 is suggesting, and see how the correction
13 factors are derived from those that would, I
14 guess, go a long way to answering your
15 question.

16 **MR. BUCHANAN (by Telephone):** Yes, at this
17 point I cannot rule it out as an SEC issue,
18 and I can't say it is an SEC issue. I think
19 it's something that remains open until we can
20 look at this further data that we haven't
21 seen.

22 **DR. ULSH:** Okay, I have down -- Josie, with
23 your agreement -- I have down as an action
24 item that we will provide the spectral
25 measurement to the working group and to SC&A,

1 spectral measurement data. But again, you
2 said yourself, Ron, earlier that, I think you
3 said that the average energy was 0.8 which
4 would mean that there is a fraction of the
5 spectrum that is well above the NTA detection
6 limits.

7 So again it's just a question of
8 picking the right number. I mean, even if
9 it's one percent that's above the NTA film you
10 can estimate. You just multiply by the
11 appropriate factor. I understand that
12 agreeing to what that number is depends on
13 providing the spectral measurement, but it
14 seems very obvious to me that this is not an
15 SEC issue. That's my position.

16 **MR. BUCHANAN (by Telephone):** Okay, well, I
17 don't know what the official definition of SEC
18 issue is, but until it has been shown that it
19 can be corrected for, and will be corrected
20 for, then the accuracy would not be
21 appropriate at this point. And so I guess
22 it's up to the working group to decide when
23 that cutoff is. But as far as I see it now is
24 that we cannot sign off and say, okay, it can
25 be produced with sufficient accuracy until we

1 see that it can be, that it's been
2 demonstrated that it can be.

3 **MS. BEACH:** And then we also heard from Don.
4 You had a paper on neutron/photon fading you
5 were going to, you were still working on.

6 **DR. ULSH:** That's in the neutron history
7 document I showed you, and I have that as an
8 action item to provide that to you as well.

9 **MS. BEACH:** So those two action items have
10 come out of this. Did I miss any others?

11 **MR. BUCHANAN (by Telephone):** Yes, we
12 haven't seen the details on the neutron/photon
13 values. We talked about spectral measurements
14 and then neutron/photon values. So we need to
15 look at those, how they was determined, where,
16 when and the details on that.

17 **MS. BEACH:** Okay.

18 **MR. STEWART:** That paper's currently under
19 review.

20 **DR. ULSH:** And we'll have that as an action
21 item and provide that as well.

22 **MS. BEACH:** Okay. Is there any other items,
23 work group members? Questions?

24 (no response)

25 **MS. BEACH:** Ron, are you prepared to go on

1 to 16?

2 **MR. BUCHANAN (by Telephone):** Yes. Item 16
3 was the shallow dose, and this again is kind
4 of a thing that we couldn't prove one way or
5 the other. Beta dose mainly and low energy
6 photon dose make up the shallow dose.

7 And Mound originally had a lot of beta
8 dose when they were using the irradiated
9 slugs, and there's some documentation in the
10 early days about that. And then they did some
11 rearranging, engineering measures to get the
12 worker away from that. And so then it kind of
13 went off the radar screen in the TBDs until
14 the '70s.

15 And the way I understand it is that
16 the person reading the film badge, you have an
17 open window which would record all the doses,
18 and a shielded window which would record the
19 deep dose. And if the dosimetrist seen a
20 blackened area under the open window, it means
21 that there was probably some shallow dose. So
22 he would record that density and then record
23 the shielded dose as normal, and they used, I
24 believe, a radium calibration to determine the
25 density reading and then convert that to a

1 deep dose to the worker.

2 Now there appears to be two areas here
3 of concern that we have is that, one, I could
4 not find any recording of shallow dose. Now I
5 didn't, I only went through a few records, but
6 I couldn't find in early days any recording of
7 shallow dose. And, secondly, and there does
8 appear to be some shallow dose recorded in the
9 later years, '70s and '80s, and so there's a
10 gap there.

11 There's kind of a black hole there in
12 the '50s and '60s and some in the '70s of
13 shallow dose recording. And then there was no
14 calibration, beta calibration, until '79 or
15 later, and then there was some difficulty in
16 meeting some of the DOELAP programs or
17 whatever was prevalent at that time. And it
18 was into the '80s before you could really say
19 you had a beta calibration so that you could
20 assign a shallow dose.

21 But that's my understanding of the
22 records and so those are the two things I
23 wanted to point out was that shallow dose does
24 not seem to be brought to the forefront much
25 in the TBD.

1 **MS. BEACH:** Thank you.

2 If you are not speaking, please mute
3 your phone. We can hear your conversations on
4 the line. Thank you. Also, if you don't have
5 a mute button, star six will work. Thank you.

6 Sorry, Ron.

7 **MR. BUCHANAN (by Telephone):** That's okay.
8 So beta dose, we cannot really find out if it
9 was a problem especially when they were using
10 the polonium and before they brought plutonium
11 in and had a lot of these lower energy
12 photons. However, we want to point out that
13 there seems to be two areas there of concern
14 is the large gap in any recording of shallow
15 dose in '50s, '60s and up into the '70s.

16 And even if you had it recorded, how
17 would you assign shallow dose because of the
18 lack of calibration. And SC&A has questioned,
19 we need to ask the working group is this an
20 SEC issue that needs to be presented here or
21 is this a TBD, a site profile issue.

22 **DR. ULSH:** I think we'll follow the same
23 format here. I'll speak in general terms and
24 let Don fill in the details.

25 First of all I would just like to

1 point out to the working group for your
2 consideration, shallow dose is mainly an issue
3 for skin cancers, not exclusively, there's a
4 few more, breast cancer, testicular cancer, I
5 think, eye, so there's a few. But the most
6 common by far where shallow dose would be an
7 issue is skin cancer. Skin cancer is not an
8 SEC cancer at this point.

9 So I think we're all trying to do the
10 claimant favorable thing. This doesn't, of
11 course, impact on whether or not we can
12 accurately reconstruct shallow dose, but I
13 would just ask you to keep that in the back of
14 your mind as we talk about this in terms of
15 whether or not it should be the basis of an
16 SEC issue. If an SEC was granted based on
17 that, it would disadvantage the people with
18 skin cancer because they wouldn't, we would be
19 saying that we can't reconstruct the doses for
20 the skin cancers, and that's where the shallow
21 dose is an issue.

22 Now in terms of whether or not it
23 really was an issue at all at Mound, one of
24 the main reasons they designed the T Building
25 as they did was because of exactly this issue,

1 shallow dose. And that's why they made many
2 parts of the processes where this was a
3 problem, a remote process. I mean, that was
4 explicitly done on purpose for that reason.

5 Now, in terms of the history of
6 shallow dose and when it was an issue, I'll
7 turn it over to Don and let you fill in the
8 blanks, Don.

9 **MR. STEWART:** Certainly, at the start of
10 processing at the Dayton Laboratory they had
11 some very high shallow dose measurements on
12 their film dosimeters. And, in fact, they
13 would, one of the problems was they would
14 quickly reach their allowable dose, tolerance
15 dose, at that time. So implicit in the design
16 of the T Building was control of these shallow
17 doses among other things.

18 And so the first two steps of the
19 process, the slug removal and the initial
20 concentration step were done in concentration
21 cells which were operated by personnel outside
22 the room using long-handled valves and things
23 of that nature under some very thick, I
24 believe it was steel shielding to shield them
25 from this shallow dose.

1 It's clear that on this basis the
2 Mound program at least felt that they, quote,
3 had no beta dose. Whether that's something
4 that we need to accept as gospel or we need to
5 go back and look at their methods for measure
6 of dose and come to a conclusion that they
7 were reliable. Certainly, there is a gap
8 there when they didn't have a beta calibration
9 prior to 1978.

10 And we are reviewing that to see if a
11 correction factor is appropriate for years
12 prior to that. Once again, we have a reliably
13 measured photon dose with our film and TLD
14 dosimeters. From that we can infer an
15 accurate or overestimating beta dose when
16 necessary.

17 **MS. BEACH:** I have a question. Can you guys
18 give me just a brief summary of what is, how
19 do you define shallow dose? I know each site
20 looks at it a little bit differently, and I'm
21 curious as to how Mound is defining shallow
22 dose.

23 **DR. ULSH:** I can give you the overview. I
24 can't give you the exact formula because those
25 vary. At Mound the way that you're going to

1 get shallow -- well, first of all, shallow
2 dose is penetrating plus non-penetrating
3 radiation. So it's going to include the deep
4 dose, but on top of that you're going to have
5 dose from things like, well, beta, if it
6 exists, or more importantly at Mound, low
7 energy photon dose. It doesn't penetrate but
8 a couple of millimeters into the skin. So
9 it's going to be both of those components
10 added together. Does that answer your
11 question?

12 **MR. CLAWSON:** It does, but you know it's
13 interesting because each one of these sites
14 it's all kind of different. I guess from my
15 kind of point on that was do we kind of know
16 how Mound set it up? Because all we've kind
17 of seen is at different sites, they've all got
18 kind of a different little process that they,
19 and terminology for shallow and deep dose. I
20 just want to make sure that we have
21 documentation at Mound how they interpreted
22 this because we're getting different
23 interpretations at different sites.

24 **DR. ULSH:** I think the reason you're getting
25 different interpretations at different sites,

1 Brad, is because different sites have
2 different kinds of radiation. For instance,
3 you may not have a low energy photon component
4 if you're not dealing with plutonium. So at a
5 uranium site that wouldn't be an issue,
6 whereas beta would be.

7 **MR. CLAWSON:** And I understand this. I just
8 want to make sure that we're all on the same
9 track for Mound, their terminology and how
10 they're implementing--

11 **DR. ULSH:** I think that is in Meyer's
12 history of dosimetry at Mound.

13 Am I correct, Don?

14 **MR. STEWART:** Oh, I'm not sure of the exact
15 documents. There are a number of places where
16 they specify the filtration for their open
17 window, and that for the density of their
18 filters for the shielded portion of the
19 dosimeters. And that really is the physical
20 constraint as to what we consider a shallow
21 dose. I don't recall the exact factors
22 offhand, but I think they used what I would
23 call a standard filtration for their
24 dosimeters.

25 **MR. CLAWSON:** In Meyer's, Volume One, page

1 nine, shallow doses were not routinely
2 reported until the '69 era. Is that fairly
3 accurate? According to Meyers that's --

4 **MR. STEWART:** Yeah.

5 **DR. ULSH:** And again, I think that is
6 because the places where you would be
7 expecting to get a lot of shallow dose were
8 remote operations. I mean, that's why they
9 did them.

10 **MR. STEWART:** And once again about that time
11 period they were surprised to find that they
12 had some darkening in the open window portion.
13 So that's when they started to look at that.

14 **MR. CLAWSON:** That was in the '77 to '79
15 timeframe?

16 **MR. STEWART:** A memorandum I think was
17 issued in 1962.

18 **MS. BEACH:** Also, on page 45 the last
19 paragraph it says what you said earlier about
20 keeping in mind the shallow dose. Of 50
21 claims with completed determinations and
22 employment prior to '79, 21 have been
23 determined to be compensable. Could we have a
24 listing of those 50 cases? I'd like SC&A to
25 take a look at those. Is that a possibility

1 to get that?

2 DR. ULSH: Yeah, yeah. We'll put that as an
3 action item.

4 MS. BEACH: Thank you.

5 MR. STEWART: Good. Those numbers may have
6 changed subsequently. I believe I did that
7 about a year ago or so.

8 MS. BEACH: So there wouldn't be less than
9 50?

10 MR. STEWART: No.

11 MS. BEACH: It may be more.

12 MR. STEWART: Correct.

13 DR. ULSH: And if it was a year ago that
14 would have included -- sorry, that would not
15 have reflected the SECs from '49 to '59.

16 MR. STEWART: Correct.

17 DR. ULSH: So those numbers will be
18 different, but we'll provide you with those
19 cases. So I think, if I understand what
20 you're asking for, the completed claims --
21 whatever the number is. It won't be 50 any
22 more -- with employment prior to '79 that
23 would have cancers of skin, testes, breast,
24 lip and eye.

25 MS. BEACH: Right.

1 **MR. STEWART:** Probably actually want to look
2 at skin cancers in this particular . . .

3 **MS. BEACH:** Yeah.

4 **DR. ULSH:** Well, we can pull you out the
5 Mound cases that have those cancers.

6 **MS. BEACH:** Okay, well, basically it said of
7 the 50. I just kind of wanted to get an
8 overview idea of what those looked like.

9 **DR. ULSH:** Okay, you've got that as an
10 action item.

11 **MS. BEACH:** Thank you.

12 Any other questions, SC&A or Ron, any
13 other questions on this 16?

14 **MR. BUCHANAN (by Telephone):** No, we did not
15 have -- this is Ron Buchanan. We did not have
16 any definite points here other than to point
17 out the gap and the calibration problem.

18 **MS. BEACH:** Okay, and just the one action
19 item or was there an earlier action item?
20 Just the one I asked for?

21 **MR. BUCHANAN (by Telephone):** Yes, that's
22 all I know of other than -- is it something
23 that should remain on the matrix. The working
24 group will have to decide that.

25 **MS. BEACH:** Okay, thank you.

1 And are we ready to move on to 17?

2 **MR. BUCHANAN (by Telephone):** Okay, this is
3 Ron Buchanan again and number 17 is the
4 monitored workers were the most highly
5 exposed. This is something that we actually,
6 we get into on every site generally, how do
7 you know the most highly exposed workers were
8 monitored.

9 Again, that's kind of a placeholder.
10 We came to the conclusion after looking at the
11 documents that we did not find documentation
12 one way or the other that there was no -- we
13 could not find a documented, continuous
14 printed document from the operators at Mound,
15 the companies operating Mound said to lay out
16 who would be badged and who would not be
17 badged.

18 Apparently, it was changed through the
19 history of the operation of ^, and so we could
20 not document it who was to be badged and not
21 be badged other than the highest exposed
22 workers who were badged. On the other hand
23 when we get into looking at individual claims,
24 which we talk about in the next issue, the 22
25 claims -- went through about 30 really, we did

1 not find an indication that highly exposed
2 workers were not badged for a long period of
3 time.

4 For example, someone that wasn't an
5 operator or something did not show in out of
6 20 years of unbadging or something.
7 Additionally, secretaries were not badged,
8 which one would expect, if the most highly
9 exposed was badged. So at this point SC&A
10 cannot find documentation showing who was
11 badged. NIOSH said last time maybe they had
12 some documents that showed the policy. We
13 have not received anything on that yet, but we
14 couldn't find anything a really smoking gun
15 saying that they weren't badged. So that is
16 where we're at on number 17.

17 **MS. BEACH:** NIOSH, do you have anything?

18 **DR. ULSH:** Yeah.

19 With regard, you know, you're right,
20 Ron, this does come up it seems at every site.
21 And I have to admit that I find that a little
22 bit frustrating, the idea that we would assume
23 that a site would not monitor the highest
24 exposed people. We have not found that
25 anywhere, that that was at least the goal of

1 the program. I mean, it would be the health
2 physics equivalent of medical malpractice.

3 If you monitored anyone other than who
4 you believed to be a highest exposed. Now, of
5 course, there are situations, you know, these
6 are human beings. There are situations that
7 might have gone unrecognized inadvertently.
8 That is a possibility. We don't have evidence
9 of that at Mound. But I guess I would say I
10 would have to see evidence that they had done
11 this for some reason that I just can't figure
12 out.

13 But in terms of cohort badging, well,
14 it's understandable that you wouldn't see
15 documentation talking about cohort badging if
16 they never did it. I mean, why talk about it
17 if you don't do it. We don't have any
18 indication that Mound ever did cohort badging,
19 and Mound's dosimetry history is very well
20 documented by Meyer, all nine volumes of it or
21 eight. There's no mention of cohort badging.

22 And again, for those of you who may
23 not know, the idea of cohort badging is that
24 not every individual is monitored but rather
25 one or more, you know, some fraction of a

1 group of people would be monitored, and that
2 would be taken as representative of the group.

3 And our position on that, number one,
4 it didn't happen at Mound, but even if it had,
5 the only way cohort badging would be
6 unacceptable would be if it was biased low.
7 If it was biased high, that's not a problem
8 for us. If it was even random and
9 representative, that's also not a problem for
10 us. It would only be if it was biased low.

11 I just don't see that this is an
12 issue. There's just no evidence that it
13 happened at Mound.

14 **MR. FITZGERALD (by Telephone):** Well, Brant,
15 this is Joe. I think this originated again
16 from a statement made in the ER that made that
17 very same assertion. And I think what we are
18 looking for is a basis for the statement that
19 was made in the ER. Because it does clearly
20 say that again that the highest exposed were
21 badged, and I haven't found any evidence to
22 the contrary.

23 But I think the reason this issue
24 originated was just simply to find what the
25 basis behind that statement happens to be. I

1 think you have articulated it, but again, it's
2 really the converse of proving that there's
3 any evidence. And we have not found any. So
4 I think we're at the point where unless we do,
5 in fact, find some obvious evidence or
6 information to the contrary, we're going to be
7 satisfied.

8 But I think we want to at least look
9 in terms of the documents retrievable. If
10 there's anything comes out of that, then we
11 would certainly bring it back to the work
12 group. But at this point we have not found
13 anything to the contrary.

14 But on the other hand I think the
15 statement in the ER didn't give us any of that
16 understanding other than to accept the fact
17 that good health physics practice would have
18 been exercised by the people managing the
19 program in those days, which I think we would
20 have some difficulty accepting at face value.
21 So that's kind of where we're at.

22 **DR. ULSH:** Okay, well, on page 47 of our
23 NIOSH responses to the Mound matrix items, we
24 give you exactly what you're looking for, Joe.
25 The quote from Meyer's document, Meyer, 1994,

1 and that quote is, "In general, all personnel
2 who enter a radiation risk area are monitored
3 for possible exposure to external penetrating
4 radiation. Personnel who work routinely in
5 risk areas are monitored for whole body
6 radiation by film badges which are evaluated
7 biweekly. Occasional visitors to the risk
8 areas are monitored by the use of film badges
9 which are evaluated the day following usage."
10 So it's not just an absence of evidence. We
11 have evidence to the contrary that anyone who
12 went in was monitored. I don't know what else
13 we could provide.

14 **MR. FITZGERALD (by Telephone):** Right, and I
15 don't think we're asking for anything more. I
16 think what we're saying is unless we would
17 find any evidence to the contrary, we're
18 willing to accept the statement at this point.

19 But the reason this issue came up,
20 just to answer, I think, your original
21 question to Ron, is the fact that we didn't
22 get that basis from the ER, and it wasn't
23 included in the ER. And so I think we wanted
24 to be sure that, in fact, what was, in fact,
25 the basis for the statement.

1 **MS. BEACH:** So, Joe, this is close to being
2 settled as I understand it unless you find
3 something to the contrary when you're looking
4 through your documents in the retrieval
5 effort.

6 **MR. FITZGERALD (by Telephone):** Yeah, and
7 again, I think this is a difficult issue.
8 We're not going to persist in trying to prove
9 the negative. I think all we're saying is
10 that whether it's an account from the manager
11 of the health physics program or a reliance on
12 general health physics practice, I mean, I
13 just think unless we come up with anything
14 that suggests otherwise, we would be satisfied
15 with this issue being settled. So I think
16 that's where it stands now. We don't expect
17 anything more from NIOSH other than we'll go
18 ahead and probably settle this in the
19 documents retrieval next month.

20 **MS. BEACH:** And I'd like to the work group
21 members, I believe Brad has a comment.

22 **MR. CLAWSON:** I was just, I guess I'm going
23 back to my work. We've got a written policy.
24 Did Mound have a written policy and this is
25 what the Meyer's --

1 **MR. STEWART:** In fact, he is quoting the
2 written policy from the inception of
3 operations at the laboratory in this
4 particular excerpt. We see similar language
5 throughout Mound's history.

6 **DR. ULSH:** Perhaps we should talk about who
7 Herb Meyer is. Was he there at the beginning
8 of the site? I know that at least the early
9 health physics reports were authored by Herb
10 Meyer.

11 **MR. STEWART:** In '47.

12 **DR. ULSH:** Okay, so he was in charge of the
13 health physics operation from the beginning of
14 the site, Brad. So this isn't someone who
15 went back retrospectively. This is someone
16 who was there when it was being done.

17 **MR. CLAWSON:** And I understand that. I
18 guess I'm trying to paint a picture for myself
19 of how this set up because I know that we've
20 got written policies of certain areas. We
21 have special areas that they have special
22 requirements and so forth actually documented,
23 and as the RWPs and so forth started to
24 evaluate and so forth, that took care of a lot
25 of that. I was just trying to paint a

1 picture. I just want to make sure we had
2 something --

3 **MR. FITZGERALD (by Telephone):** Brad, this
4 is Joe. I think at the last meeting NIOSH was
5 going to see if there was a written policy,
6 and I would assume from what was provided
7 there may not be a written policy but there's
8 this account, documented account, by Herb
9 Meyers. And again, I think that may be the
10 most definitive answer to that particular
11 question. But it, you know, that's where we
12 stand right now.

13 **MR. CLAWSON:** Okay.

14 **MR. FITZGERALD (by Telephone):** I think once
15 we have the documentation and if we don't find
16 anything that clearly contradicts any of that,
17 then I think we can go with that.

18 **MS. BEACH:** Okay, any other --

19 **MR. STEWART:** I'll just point out one more
20 thing. Page 49, the next to the last
21 paragraph in the NIOSH response, the middle of
22 the paragraph, citations from Meyer's history
23 are given that re-articulate the policy at
24 different points in the program's history.
25 And once again, Meyer's history, beyond being

1 a narrative, also incorporates a very large
2 number of policy documents and management
3 memoranda for the program. So Meyer's history
4 is beyond what the exceptional individual for
5 Meyer wrote down. He kept all of this
6 documentation, and he put it into his history
7 which is why it's such a very large document.

8 **DR. ULSH:** And that is available on the SRDB
9 if you want to take a closer look.

10 **MS. BEACH:** Is there any other items for 17?
11 (no response)

12 **MS. BEACH:** So we will move on. Bob --
13 Oh, go ahead.

14 **DR. ULSH:** Before you do that could I just
15 ask you what the status of issue 17 is then?
16 Is it a closed item with the option to reopen
17 if SC&A finds something or --

18 **MS. BEACH:** Joe, at this time do you want to
19 close that item or would you --

20 **MR. FITZGERALD (by Telephone):** Well, I
21 think we're going through documents retrieval
22 next month so I would anticipate, unless
23 something arises, I mean, it's sort of a
24 qualified close. I would close it qualified
25 on this review that we haven't yet done of

1 documents we've requested at Mound. And
2 that's near term. That's next month. So I
3 don't know if that answers your question, but
4 I think that's where it stands as status.

5 **MS. BEACH:** At this time what I would like
6 to do is leave it open until our work group
7 meeting. That gives you the chance to look
8 through the documents. If nothing is found,
9 then we will close it at the next work group
10 meeting.

11 **MR. FITZGERALD (by Telephone):** Yeah, like I
12 said, again, we have not found anything. We
13 accept certainly that there's some definitive
14 documentation, no policy, but I think, again,
15 the history's pretty detailed. But we still
16 want to satisfy ourselves in terms of what we
17 see in the documents. So I think it's headed
18 toward closure but I want to keep it open.

19 **MS. BEACH:** Thank you. We will do that as
20 long as there's no disagreement. Let's move
21 on.

22 Ron, are you going to take number 18
23 to start with again?

24 **MR. BUCHANAN (by Telephone):** Yes. In the
25 interest of time I'll talk about 18 and 19

1 together, although I would like to keep them
2 separate in our minds because they're two
3 separate issues. Eighteen is efficacy of
4 external dose record, meaning is there enough
5 dose records there to do dose reconstruction.

6 And 19 is integrity and completeness
7 of the external dose records which means was
8 the data transferred faithfully from one
9 system to the other control and does the old,
10 handwritten records match the MESH database.
11 And this is important at Mound because they
12 went through several databases from the old,
13 handwritten records to electronic forms and
14 another electronic form in the MESH database.
15 And so what SC&A's question was, was this done
16 faithfully.

17 And so number 18, the adequacy of
18 external dose, now this means is there enough
19 there to do dose reconstruction. Now I did an
20 analysis of 22 cases as a basis for my
21 response to 18 and 19 of Mound workers. And
22 the spectrum of job titles I tried to get over
23 a wide area, all the way from operators to
24 security guards to maintenance people so that
25 we could get a --

1 Now this is like, I'd like to
2 emphasize to begin with, this is all based on
3 a very limited sample. In fact, only about
4 five percent of the claims was analyzed, 22
5 out of 447. And this was limited to a period
6 when there was some original data. You have
7 to realize that the handwritten, original data
8 only starts in the '50s and goes to the '60s.
9 In the '60s there are some handwritten
10 summaries of yearly exposures up through '68.
11 And after that you have no original data to
12 compare it to and so this is based strictly on
13 the '50s and '60s there is no data.

14 And then I went to the O drive to the
15 MESH database and said, okay, for this worker,
16 for this period of time if he got a certain
17 amount of dose is that faithfully reproduced
18 in the MESH database today. And so what I did
19 was looked at these 22 workers, and I sent
20 that three-page summary out, Joe did, which
21 gives you a text summary on the first tab. It
22 gives you a summary Excel spreadsheet on the
23 second tab, and it gives you examples of the
24 records on the third tab. I photocopied the
25 records showing the original, the summary

1 reports and the MESH database.

2 And so what I found was that workers
3 that I looked at that should have had dose
4 recorded had dose recorded in most part. I
5 mean, there were some gaps and that sort of
6 thing, but I did not find any large gaps for
7 set eight. The operator doesn't show a change
8 in work habits that he's missing ten years of
9 data out of 20 years, nothing.

10 And so I did not find at this point on
11 the very limited sampling I did, workers that
12 were not monitored when they needed to be
13 monitored. And so the amount of data was
14 there to do dose reconstruction. And, in
15 fact, these dose reconstructions were
16 completed that I sampled.

17 And then on the second point that the
18 item number 19, the integrity, for example, if
19 the person received a certain amount of gamma
20 dose earlier was that in the MESH database. I
21 only found one, 30 millirem was missed or
22 something. So it was a fairly high percent
23 of, I think on this in the reproduction of the
24 data.

25 And so I think it's like 97 percent or

1 99 percent like that. And so we did not find
2 any large errors in the transfer of the data.
3 And again, this is limited to just the few
4 originals I could find in the '50s and '60s
5 compared to the MESH database. And so since
6 there is no originals for the '70s, '80s and
7 that sort of thing, I could not do any
8 comparison from original to the MESH database.

9 And so I guess what SC&A found out was
10 that in this very limited sample we did not
11 have anything that indicated right off that
12 there was a problem. And so the working group
13 wants to consider --

14 Okay, there's two things I should
15 mention though before I close those out and
16 that is that it appears to me in this analysis
17 that the MESH database put zeros when there
18 was no monitoring. They put zeros in when
19 there were zeros. They put positive values
20 when there was positive values, but also put
21 zeros in when there was no monitoring. The
22 original, handwritten cards might have a dash
23 or a blank for a cycle, but the MESH database
24 automatically, zeros in.

25 And this could lead to two problems,

1 cautions here is that if a worker was not
2 badged, and the dose reconstructor looks at
3 his MESH database, it'll say zero, and he'll
4 assign a missed dose based on LOD over two
5 instead of saying, okay, this worker wasn't
6 monitored. We may need to assign coworker
7 dose, which is generally higher than your
8 missed dose. And so that would not be
9 claimant favorable.

10 And also it shows that shallow doses
11 were measured all the time. And, of course,
12 we know, we just discussed that wasn't true
13 because they put a zero in each of those
14 entries. And secondly, if this database
15 that's used for coworker data, then it will be
16 biased low unless all the zeros are eliminated
17 and only positive values used. That's one
18 thing that we need to keep in mind.

19 Number two is, and I pointed this out
20 before, and it's easily corrected, is that in
21 the MESH database it appeared to me that the
22 low neutron -- excuse me, the low gamma column
23 and the neutron column are reversed. But now
24 I did look at the dose reconstruction. Two
25 cases had neutrons, and they used the correct

1 column even though the ^ was incorrect.

2 And so those are where we're at on the
3 data for Mound. And at this point with our
4 small sampling that we've done, we do not have
5 anything that points to a serious problem.

6 **MR. FITZGERALD (by Telephone):** And let me
7 just add that this strategy of doing a limited
8 sampling, 20 to 30 initially and then
9 broadening that sample if it turns out there
10 are issues or questions, is an approach we've
11 taken in other sites. And so in this
12 particular initial sampling, given the
13 results, we believe that this is a sufficient
14 result to believe that we're in reasonable
15 shape of completeness.

16 **MS. BEACH:** NIOSH, do you have anything?

17 **DR. ULSH:** Not much. I guess I take some
18 comfort that you found the degree of
19 completeness that you did and agreement. A
20 couple of things though about some of your
21 conclusions.

22 We're not proposing at this point in
23 time to generate a coworker model at Mound for
24 external dosimetry. Based on the evidence
25 that we have that if you went into a neutron -

1 - I'm sorry, into a radiation area you were
2 monitored. So we don't see that there is a
3 significant unmonitored population at Mound,
4 if any at all.

5 With regard to zeros being put in when
6 a person was unmonitored, Ron, I think you
7 said that what would normally happen is that
8 an unmonitored person would be assigned
9 coworker dose, and that it may not be claimant
10 favorable if a person was unmonitored to
11 assign a missed dose instead of coworker.

12 **MR. BUCHANAN (by Telephone):** Yes, that's
13 what I said.

14 **DR. ULSH:** That's not always the case. We
15 assign coworker dose when someone is
16 unmonitored and they go into radiation areas
17 either frequently or sporadically. If a
18 person is unmonitored but does not go into a
19 radiation area, we typically assign ambient
20 environmental, which would be much lower than
21 assigning missed dose.

22 So I don't think, at least in this
23 situation at Mound where if you went into a
24 radiation area you were monitored, I don't
25 think that it would be claimant unfavorable to

1 assign, I guess, incorrectly assign a missed
2 dose based on a zero that isn't real.

3 **MR. STEWART:** Yeah, I'll just observe a
4 little more detail. In terms of dose
5 reconstruction at Mound we do assume that
6 those are zero dose results. They are entered
7 as zeros. We also understand that those are
8 not necessarily valid zero dosimeter results.
9 Typically, we don't have cycle data so that
10 forces us to estimate the missed dose high.
11 And these doses do accumulate very rapidly.
12 Typical missed doses at the Mound site are
13 very large.

14 We would not, for the Mound site, we
15 would not assign a coworker dose at this point
16 because we do believe that monitored, or
17 individuals who were exposed were monitored.
18 And all of our case evidence suggests this.
19 At other sites we have seen cases where an
20 individual worker will say I did such-and-such
21 work in 1968 through 1970, go back and don't
22 see dose results for that work, then we'll
23 apply coworker dose. We have not seen
24 instances of that in Mound cases.

25 **DR. ULSH:** In large part with a couple of

1 exceptions we're in agreement. I mean, I
2 haven't looked at the cases that SC&A --

3 **MS. BEACH:** The 22?

4 **DR. ULSH:** Right, but I guess I'd like to
5 hear what the work group thinks about this
6 issue. And if it requires, we could take
7 another look, but --

8 **MR. CLAWSON:** I just want to make sure that
9 we're taking care -- I guess part of my issue
10 is as we have seen at other sites and so forth
11 like that, especially not being able to, the
12 MESH database to the original data, we really
13 don't have a comparison, from my
14 understanding. Is that correct?

15 **DR. ULSH:** Well, I think that comes from
16 similar to at other sites, Brad. Starting
17 from the beginning of operations, early maybe
18 '40s, '50s, maybe even '60s, the method of
19 keeping track of doses was you handwrite them
20 on cards or whatever. At a certain point in
21 time they went to computers, and they stopped
22 writing the originals so it's direct entry.

23 I think that's what you've got here.
24 You've got -- I can't remember what Ron said,
25 maybe up into the '70s perhaps where you have

1 the original handwritten records, and then you
2 don't see them after that. That would be
3 consistent with Mound doing what they did at
4 other sites, and that is direct entry into the
5 computer records.

6 **MR. CLAWSON:** Well, I guess this is kind of
7 where I get into the thing -- and we've looked
8 at this at many different sites and so forth
9 like that is, going from the paper to the
10 database. How many different databases have
11 we been through at Mound? I was trying to go
12 through it. There was PORECON --

13 **DR. ULSH:** Well, hold on. There was XRAD?

14 **MR. STEWART:** The first one was EXAS, E-X-A-
15 S. That's an external dose system. I believe
16 that was an IBM-based system. And then that
17 was migrated I think to MESH. And that became
18 their external database. In fact, I think
19 it's all their health records. PURECON is the
20 plutonium database. PORECON is the polonium
21 database.

22 **DR. ULSH:** And that was, I think -- I might
23 have this wrong. If Liz is on the line, she
24 can correct me. One of those was used by MJW
25 in their dose reconstruction. They got it

1 from a site, PURECON I think. And I think MJW
2 created PORECON. It might be the reverse of
3 that. So there's been a couple migrations,
4 Brad, but not a lot.

5 **MR. CLAWSON:** So what about the shallow, you
6 know, we talked a little bit earlier about the
7 shallow dose and so forth like that and the
8 low gamma I believe is what it was, and there
9 were zeros in that. We've already looked
10 earlier that we kind of had a flaw in that in
11 the earlier years. I guess I was just
12 wondering how we're going to handle those
13 zeros in that area.

14 **MR. STEWART:** The zeros in that area?

15 **MR. CLAWSON:** Yeah, because -- I'm jumping
16 back and forth but, you know, earlier we were
17 talking about shallow dose versus deep dose.
18 Now we're seeing zeros in these areas but we
19 knew that we had these issues and problems.

20 And I'm just wondering how we're
21 tracking, how are we going to handle those
22 zeros in that area. Because we showed a flaw
23 early on somewhat that they were having
24 problems. When I say flaw, I'm not saying
25 they were just having trouble doing this. And

1 I'm just wondering how we're going to handle
2 all those zeros in that area.

3 **MR. STEWART:** We can go back and look at the
4 data. Once again, we have reliably measured
5 photon doses throughout Mound's history, and
6 since those data are based on individual
7 measurements associated with the individual
8 whose dose we're reconstructing, that would be
9 the most accurate place to start in terms of a
10 possible proportional dose from low energy
11 gamma.

12 **DR. ULSH:** So what you're talking about I
13 think is similar to estimating a neutron dose
14 by n/p ratio, I think what you're talking
15 about is if you've got a deep dose, it might
16 be possible, if appropriate, to apply a factor
17 to, a deep-to-shallow ratio. We can live with
18 that.

19 **MR. CLAWSON:** I'll just be right honest
20 here. What I've heard from some of the
21 petitioners at Mound and so forth like that,
22 they're not sure how, you know, we've got zero
23 doses here. We understand that there was some
24 problems in that, but I'm still showing zeros
25 in these areas and how are we going to deal

1 with and take care of that. I guess my
2 suggestion I'd like to be able to see how
3 we're handling this process and go from there.

4 **MR. STEWART:** Yeah, we will publish that in
5 the revision of the TBD.

6 **DR. ULSH:** We will, but I think we need to
7 address Brad's question a little, before the
8 official version of the TBD comes out. How
9 about if we take it as an action item to
10 present to you a strategy for estimating
11 shallow dose at Mound? Or at least to
12 summarize why we think it's not an issue if
13 that's what we think.

14 **MR. CLAWSON:** Yeah, and that's just what
15 we're trying to cover and so forth especially
16 how and that will be taken into the zeros and
17 so forth and their shallow doses and so forth
18 like that.

19 **DR. ULSH:** Okay.

20 **MS. BEACH:** Will we do that under the
21 shallow dose issue?

22 **DR. ULSH:** I don't know. Where is it most
23 appropriate to do that?

24 **MS. BEACH:** I think possibly at the, at 16.
25 What do you think, Brad?

1 **MR. CLAWSON:** Well, actually, and this is
2 kind of where they overlap, it's in 16 and 19.
3 I think as we get into 16 it'll take care of
4 the shallow, but we need to be able to see how
5 we're going to implement that and so forth in
6 19.

7 **MR. FITZGERALD (by Telephone):** Sort of a
8 broader question in how one implements the
9 issue of zero --

10 **MR. CLAWSON:** Right.

11 **MR. FITZGERALD (by Telephone):** -- as actual
12 data. And that's both shallow as well as the
13 one that Ron was discussing a minute ago.

14 **DR. ULSH:** So how about if we take on 16 an
15 action item where we will summarize the
16 history of shallow doses at Mound and how it
17 was or was not monitored? And then under 19
18 we'll talk specifically about zeros and
19 whether or not they're real zeros in terms of
20 shallow dose.

21 **MR. CLAWSON:** And how it was implemented.

22 **DR. ULSH:** Does that sound reasonable?

23 **MR. CLAWSON:** Yeah, that's great.

24 **MR. FITZGERALD (by Telephone):** This is Joe
25 again. Under 19, Brant, you mentioned

1 something about summarizing QA/QC steps taken
2 during the transfer of data. Is that
3 something that would be forthcoming or are you
4 going to refer to the, I guess, the documents
5 that exist? How are you handling that?

6 **DR. ULSH:** To be honest with you, Joe,
7 that's not one that we've had a lot of action
8 on since the last working group meeting.
9 We've been focusing on the road map which
10 we'll get to later.

11 **MR. FITZGERALD (by Telephone):** Right, okay,
12 just wanted to check on that. I think that
13 was addressing Brad's earlier, he was getting
14 into that issue as well.

15 **DR. ULSH:** I guess at the end --

16 Well, go ahead, Brad.

17 **MR. CLAWSON:** I was just going to say I
18 guess that basically does the QA of the MESH
19 databases, the data transfer or whatever, but
20 that was kind of, that's not one, that's kind
21 of one that's back there.

22 **DR. ULSH:** At the end, Josie, maybe if we
23 could talk about your priorities in terms of
24 what issues you want to see action on.

25 **MS. BEACH:** That's what we've got settled

1 for the end of the day.

2 And just for the record our designated
3 federal official has now joined us live.

4 **DR. WADE (by Telephone):** Chia-Chia,
5 welcome. This is Lew. I've been sitting in
6 for you, but I'll let you assume the mantle
7 now. I'm available by telephone any time if
8 you need me, Chia-Chia.

9 **MS. CHANG:** Hi, is this working? Can you
10 hear me?

11 **DR. WADE (by Telephone):** Yes.

12 **MS. CHANG:** Thanks a lot, Lew, and I
13 apologize for being late, and thank you for
14 everybody's patience.

15 **DR. WADE (by Telephone):** Bye now.

16 **MR. CLAWSON:** But Lew, it's always good to
17 hear from you.

18 **DR. WADE (by Telephone):** Thank you. It's
19 good to listen.

20 **MS. BEACH:** Okay, do we have anything more
21 on 19, 18 or 19?

22 **MR. BUCHANAN (by Telephone):** This is Ron
23 Buchanan, and I want to make one summary point
24 on the importance of the zero in the MESH
25 database is that in some dose reconstructions

1 I have seen where it says, okay, the worker
2 has all zeros for neutrons or shallow or
3 whatever -- not just shallow but for neutrons,
4 too -- for this ten-year period. And he
5 showed no positives so we don't assign a dose.

6 And so this is the problem I see with
7 a database which automatically puts zeros in.
8 The dose reconstructor can think, oh, he was
9 monitored. He got all zeros. He doesn't need
10 a dose or just missed dose or something like
11 that. And so this was the main point I wanted
12 to make about the zeros being entered
13 automatically.

14 **DR. ULSH:** I understand what you're saying,
15 but if it hinges on, I guess it comes down to
16 whether or not you, the working group, has
17 confidence in if someone went into a radiation
18 area, then they were monitored. If that's the
19 case, if you accept that, then I don't think
20 we have an issue here because we're assigning,
21 you know, as Don said, particularly in the
22 early years when we don't have cycle data,
23 we're assigning a lot of missed dose because
24 we take the worst assumptions in terms of how
25 many badges he might have worn. If you don't

1 have confidence in that, then we might have an
2 issue that we need to discuss further. So I
3 would put that in the working group's hands.

4 **MR. SCHOFIELD:** How good is the data that
5 you know of, historical data that they had for
6 monitoring the neutrons at the facilities?

7 **DR. ULSH:** For neutrons?

8 **MR. SCHOFIELD:** Yes.

9 **DR. ULSH:** Well, it appears to be pretty
10 complete. We haven't noticed any big gaps in
11 terms of that.

12 **MR. SCHOFIELD:** And so there are records of
13 them doing assays and --

14 **DR. ULSH:** Oh, certainly, there are records
15 of people being assigned NTA films or later
16 neutron TLDs. There are also records which we
17 have as an action item to share in terms of
18 measuring the spectral, the neutron spectrum
19 and also n/p ratio measurements. Does that
20 answer your question, Phil?

21 **MR. SCHOFIELD:** Yes.

22 **MR. CLAWSON:** I guess my question is, is I
23 understand, and I've watched this at many
24 different sites and so forth like that. We
25 have a lot of people that should have been

1 monitored, well, and that were monitored. And
2 when we say that should have, would have,
3 could have, I'm not meaning anything by that
4 but I guess part of my thing is what we've
5 also seen is people not routinely going into a
6 radiation area all of a sudden show up with
7 something, and they say it's, this person
8 doesn't really work in that area so it's just
9 a false positive, a secretary, you know,
10 different little things like that.

11 I just want to make sure that we're
12 covering these people because these people,
13 because these people may have, well, I've got
14 a badge. I can go into these areas. It's not
15 a big deal. And then all of a sudden they're
16 getting doses or whatever like that, and it's
17 not being recognized.

18 **MR. STEWART:** Well, let must assure you that
19 anyone who has a recorded dose at Mound, that
20 dose is used to reconstruct their total dose
21 regardless of their job title.

22 **MR. CLAWSON:** Well, and I realize that, and
23 I'm not saying about you guys. But what I'm
24 saying is the Mound standpoint because we
25 still see it today in today's areas that,

1 well, this is basically a false positive
2 because this person does not go into these
3 types of an area. As a matter of fact in our
4 areas there are people that aren't wearing
5 badges anymore, and I think it's the pendulum
6 theory. We're going back to what it was in
7 the early years. And unfortunately, I think
8 it will bite us, but that's a different issue.

9 **DR. ULSH:** I understand what you're saying,
10 Brad. I think that's going to be more of an
11 issue at sites where people have access to
12 radiation buildings but don't, but there are
13 parts of the buildings where it's a radiation
14 area and parts that are not. I think that's
15 where it gets into trouble.

16 **MR. CLAWSON:** Yeah, well, in the worker
17 interviews we went through this and several of
18 the people that we've discussed -- and this
19 is, this is a problem that we find in many
20 different sites. We have a building that has
21 several different radiation areas in it and so
22 forth like that, and some that aren't.

23 And basically the ones that aren't
24 they're saying, well, you don't need to be
25 badged here. But you go through all these

1 other ones to get to the other ones, but you
2 don't work in a radiation area. Just want to
3 make sure that we're, I guess the badging
4 requirements and so forth like that. I
5 understand that they had a policy there, but
6 that's working in the area that I think I'm
7 looking at someone that didn't.

8 Because in the interviews we had
9 several people that discussed that, no, I
10 worked in this building. I didn't work in the
11 radiation areas so therefore I wasn't badged,
12 but I still went through these areas, and I
13 still did these things. That's kind of what
14 I'm getting at with this. I know it's
15 roundabout, but we see this at numerous sites,
16 and I just want to make sure that we're, how
17 we're kind of handling some of that.

18 **DR. MAURO (by Telephone):** This is John
19 Mauro. I have a question related to this
20 matter. Can you hear me okay?

21 **MS. BEACH:** Yes.

22 **DR. MAURO (by Telephone):** Ron, when you
23 looked at the sample sets of cases, did you,
24 when you were going through them, was there
25 any indication that individuals that were not

1 monitored, let's say in other words did you
2 have cases where, let's say, over some time
3 period the worker was not badged, and it
4 certainly appeared to you based on the record
5 that there was no reason to badge them. This
6 goes to the question of when we see that a
7 person was not badged, and he was assigned a
8 zero. Right now what I'm hearing is, well,
9 there's good reason to believe he really did
10 not enter a radiation area, and he should be
11 assigned a zero for the dose or just ambient
12 as they mentioned. Any indication from the
13 sampling that you did look at that that kind
14 of situation existed?

15 **MR. BUCHANAN (by Telephone):** Yes, this is
16 Ron Buchanan. Yes, that is true. That's the
17 reason there's 22 instead of 20. I originally
18 planned on 20 workers, but the two last ones
19 did not have badges. And I believe they had
20 perhaps X-ray data and a spot bioassay if I
21 remember right, but no badges. But they were
22 secretaries and packing technician or
23 something. And so I did look at two besides
24 what I expected to be badged, and the two that
25 I looked at that I didn't expect badged were

1 not badged.

2 **DR. MAURO (by Telephone):** Okay, thank you.
3 That was my question.

4 **MR. STEWART:** And just a little more detail
5 on that. I've seen quite a number of claims
6 where the workers had job titles associated
7 with non-radiological weapons parts. They
8 call them small parts workers. They worked
9 with adhesives and plastics and things of that
10 nature.

11 I have one individual who was for a
12 number of years a small parts worker. And the
13 records in MESH said not monitored. At some
14 point she transferred and became a radiation
15 protection technician and was badged early in
16 the, right when she first transferred over,
17 did that work for approximately a year and
18 then went back to small parts. And then once
19 again we see the records go back to n-slash-m.

20 **DR. ULSH:** A couple of things that are
21 different at Mound, and this is not
22 necessarily from a radiation protection
23 standpoint but from a tight security
24 standpoint. If you didn't work in SM, it's
25 not a building you just wandered through.

1 There are a couple situations, Brad,
2 like you mentioned where you might have had to
3 walk through a hallway to get to a different
4 building in other parts, but you didn't go
5 into TP Building or SM Building unless you
6 worked there unless you were just passing
7 through a little corridor.

8 The other thing to keep in mind is
9 unlike a lot of other sites, Mound had a very
10 large component of work -- Don mentioned it --
11 that was not related to radiation. They did a
12 lot of explosives work and that kind of thing
13 where you wouldn't expect to see radiation
14 monitoring. So that perhaps is a little
15 different from some other sites as well.

16 **MR. CLAWSON:** This is Brad. And we saw this
17 in the interviews. This is what's interesting
18 about all these complexes. You can't, unless
19 you get to the gaseous diffusion plant, they
20 had one main issue. But you get to these
21 other ones, and they had a lot of different
22 stuff going on, and people crossing from one
23 end to the other.

24 But see, this is where the disconnect,
25 I think, really comes in how did we monitor

1 these. And this is where we get into the
2 procedure process because a lot of times they
3 were changing back and forth. And then you
4 get into the roving maintenance people and so
5 forth like that, and that really became
6 interesting to me to be able to listen.
7 Because if they needed people, they needed
8 stuff now, and you can go back at the building
9 and the facilities and so forth like that.

10 They started out as this, but by the
11 time they came to the end, they'd built inside
12 of rooms, inside of buildings and everything
13 else like that to be able to do new processes
14 or so forth like this. And I just want to
15 make sure that we're looking at how this all
16 came about because there is quite a history
17 there.

18 **MR. STEWART:** You bring up an issue that was
19 documented in Mound's history, and that is
20 routine badging versus non-routine badging,
21 and it was an issue that a number of
22 maintenance personnel were not issued badges
23 on a periodic basis like the people who were
24 working the production areas were. This
25 quickly became a problem as additional

1 maintenance and modifications were required
2 because those personnel were required to get a
3 badge when they entered the area.

4 And soon the cost of doing, and it was
5 only a daily badge, but they called them
6 visitor badges, when in fact they were for any
7 personnel entering the area that did not have
8 a routine badge. Those numbers quickly passed
9 the numbers of routine badges that they
10 processed.

11 **MR. CLAWSON:** Well, I go back to one of the
12 electricians or so forth that we interviewed
13 in the Mound discussions and so forth like
14 that. And he was just talking about, well,
15 no, I wasn't classified as a radiation worker,
16 but we run power over to these facilities and
17 because we weren't -- where the boundaries of
18 the facility ended it didn't stop him by a
19 badge.

20 And he actually went into some of
21 these areas and so forth like this. And I'm
22 sitting there, well, how were you monitored or
23 so forth. Well, I wasn't required to be
24 monitored. But he was going into these
25 buildings to run these lines. And I know that

1 this was more in the early years and so forth
2 like that, and as security increased and so
3 forth like that, it kind of took care of some
4 of that because getting into the areas.

5 But I just want to make sure that
6 we've got a process to be able to take care of
7 that. You know, this kind of falls back into
8 several of these different issues. I don't
9 know where we could put it into one.

10 **MS. BEACH:** It really goes into issue 17 I
11 think. The one we qualified closed. It's the
12 badging policies used. The Meyer statement
13 also talks about occasional visitors. So it
14 seems like there's still some questions on how
15 people were badged.

16 **MR. CLAWSON:** And I guess this will come up
17 with SC&A. I just want to make sure because I
18 know that I want to make sure that these zeros
19 are being taken care of and so forth.

20 **MR. STEWART:** Just to address that, Brad. I
21 think what you're talking about is what we
22 would call ambient dose rate, something an
23 individual could access just by being on the
24 Mound site and not entering the controlled
25 area. Currently, any area that an individual

1 went into that required badging was posted as
2 controlled. It is likely the case in the
3 early days as well.

4 In case it's not we include in every
5 dose reconstruction an ambient dose. That's
6 when the person's not monitored. And the
7 ambient dose that we assign is based on the
8 highest measured outdoor dose on site. And I
9 don't remember offhand where that is, but we
10 have those values. And even an ambient dose
11 is a considerable amount of dose, at least in
12 terms of what people typically receive now on
13 their TLDs.

14 **MR. CLAWSON:** Yeah, and I understand that.
15 I know where this one came from was I believe
16 there was a radon issue and basically what
17 they got into was this, to be able to run this
18 electrical system, they went through the
19 tunnel and in his recollections they weren't
20 monitored and so forth. So this is kind of
21 where I get back to this.

22 I know that we had a policy in there,
23 but how, it seems like it's a little bit
24 lacking in some areas. But I'm sure this will
25 come up as we go through the process. I'm

1 just trying to make sure you kind of get an
2 overview of what we've seen, and what we've
3 heard as the working group myself of kind of
4 the badging policy. And that's why we
5 question some parts of this. But I'm sure as
6 Joe goes through this inspection and so forth
7 like that that it'll come out.

8 **MR. STEWART:** We feel the highest measured
9 ambient dose rates to all individuals at all
10 times is claimant favorable and inaccurate,
11 obviously inaccurate, but claimant favorable
12 method of estimating what they might have
13 gotten if they were walking around controlled
14 areas but not entering them.

15 So it's one of those things that we
16 build favorability for the claimant rather
17 than going back and trying to estimate their
18 point dose rates during their entire career.
19 It's simply not possible for us.

20 **MR. SCHOFIELD:** What about, say, some of the
21 office workers who worked in the office
22 literally just almost right next door to some
23 of these processing areas and stuff. They
24 were never badged and, true, they didn't go
25 down into these areas. They didn't go around

1 it. Yet from different information I've seen,
2 these people were getting a dose just because
3 of the, but yet they were not monitored for
4 this. Are you going to take a different
5 ambient dose?

6 I mean, it's a common problem. I
7 mean, you can have a processing building here
8 and right over here you have an office
9 building. Yeah, you've got a security fence
10 or something maybe dividing them, but there is
11 dosage coming across. Just because that
12 security fence is there, doesn't stop the
13 dose.

14 So these people who worked in this
15 office are going to get some dose, but they're
16 never badged because they never go on this
17 side of the fence. So are you using different
18 ambient doses or are you taking a general
19 average?

20 **DR. ULSH:** No, we're taking the highest.

21 **MR. SCHOFIELD:** You're taking the highest?

22 **DR. ULSH:** The highest measured on site.

23 **MR. SCHOFIELD:** Okay, for everybody who's
24 not monitored?

25 **MR. STEWART:** We can in some cases if we

1 felt that we needed to moderate that a little
2 bit, we could do that if we knew where a
3 person worked, and we knew that no way could
4 they have gotten that highest dose rate all
5 the time. We could go back, and we could use
6 the data and say, okay, while they were here,
7 the dose rate here is most closely
8 approximated by this measurement, take a
9 claimant favorable, but less claimant
10 favorable assumption for that one individual.
11 In fact, we don't usually get to that level of
12 detail and simply assign the class.

13 **MR. SCHOFIELD:** Okay, that's what I wanted
14 to know.

15 **MS. BEACH:** So at this point 18 and 19 I
16 don't believe we're ready to close those out.
17 Do we have agreement there?

18 **MR. CLAWSON:** Yes.

19 **DR. MAURO (by Telephone):** Josie, this is
20 John Mauro.

21 **MS. BEACH:** Hi, John.

22 **DR. MAURO (by Telephone):** I have just one
23 quick question. When you look at the records,
24 is it self evident which zeros are zeros
25 because the person was monitored and the

1 reading was below the detection limit and they
2 reported zero, and those people who were just
3 monitored -- I'm sorry, those people who were
4 not monitored and perhaps deliberately were
5 not monitored? Is it self evident the
6 distinction between those two different kinds
7 of zeros?

8 **MR. STEWART:** Not always, usually not. And
9 for that reason we typically assume that they
10 are monitored and assign the missed dose.

11 **DR. MAURO (by Telephone):** So on other sites
12 this type of zero issue was very important.
13 But you're saying in this particular case
14 there's good reason to believe that when a
15 zero was assigned because the person wasn't
16 monitored, there's good reason to believe he
17 did not experience any dose other than
18 ambient. And I think that's a very important
19 rock that you're standing on, and I wanted to
20 just alert everyone to that.

21 **MR. FITZGERALD (by Telephone):** Yeah, and
22 this is Joe. I think when I said we were
23 going to get more data and more documents it
24 was really to test the thesis that -- and we I
25 think are on the same place that we've

1 interviewed people, we've looked at
2 documentation. Certainly, Mound's history
3 suggests that you didn't enter rad-controlled
4 areas unless you were badged and had business
5 in that particular building.

6 And that sounds like again a pretty
7 strong operating principle. However, we want
8 to validate that, or continue to validate
9 that, that we didn't have, say, security
10 guards, maintenance people, crafts people
11 entering these areas without in fact getting a
12 building-specific badge which was the
13 practice.

14 And so we'll be certainly very
15 attentive to that particular issue because to
16 my way of thinking that would be the only
17 place where this notion of high ambient would
18 not be correct if, in fact, you had people
19 that were entering these areas. But it's not
20 likely, at least at this point, from our
21 interviews and what we've seen.

22 **MR. GIBSON (by Telephone):** Josie, this is
23 Mike. Can I make a comment?

24 **MS. BEACH:** Yes, you sure can, Mike.

25 **MR. GIBSON (by Telephone):** And I know it's

1 inappropriate. I'm a member of the public,
2 and I just want to make a comment for the
3 record. There were several areas where people
4 could just wander through controlled areas,
5 hot buildings, and there were employees who
6 were stationed in non-rad areas that did work
7 in controlled areas and may have not been
8 monitored. And I'll get that information to
9 the work group or SC&A at the appropriate
10 time. I just, I had to challenge the
11 statements that were made earlier.

12 **MS. BEACH:** Thank you, Mike. I also
13 suggested that we interview you officially so
14 you'll be looking forward for that at a future
15 date.

16 **MR. GIBSON (by Telephone):** That's fine,
17 thanks.

18 **MS. BEACH:** I have been asked to give us a
19 short break. If there is no objection or any
20 other comments you must make on this issue,
21 when we come back from break we're going to
22 move on to issue number nine in trying to stay
23 somewhat on schedule. We're already a half
24 hour behind our schedule, an hour if you must
25 know the truth.

1 Any objections to us -- how much time,
2 five minutes or ten? We're going to take a
3 ten minute break. We will leave the line open
4 although we'll be on hold.

5 (Whereupon, a break was taken between 11:05
6 a.m. and 11:15 a.m.)

7 **MS. CHANG:** We're starting back now on
8 Mound. We will proceed in one second. I just
9 wanted to remind everybody to please put your
10 phone on mute unless you're talking.
11 Preferably don't put us on speaker phone. If
12 you don't have a mute button, use star six,
13 and then when you need to speak you can unmute
14 by pushing star six. And then when you finish
15 speaking please do mute yourself again with
16 star six. All right, end of speech. Thank
17 you.

18 **HIGH FIRED PU-238 MATIRX ISSUE #9**

19 **MS. BEACH:** We are going to go ahead and
20 move on to issue number nine in the matrix,
21 the high-fired Plutonium-238, matrix issue
22 number nine.

23 **MR. CLAWSON:** Josie, before we start I just
24 want to make a comment. You know, I
25 understand that we refer to Meyers in a lot of

1 sense, but this kind of an issue of mine is
2 that I know he's a subject matter expert, but
3 he's justifying his process that he's built.

4 You know, he goes clear back to the
5 beginning of this so I want to take one thing
6 in context and that is is that we're referring
7 to this man, and it's just like me. I am not
8 going to tell you all my flaws that I have
9 even though they come out quite often. And in
10 these processes and stuff he's justifying his
11 process that he has set up. I just want
12 always -- why people are a little bit leery
13 about that when we're using this as a
14 controlling document.

15 There's kind of a little bit of a
16 conflict there because he was it. But I know
17 that we need to be able to use it as a subject
18 matter expert or whatever else like that. But
19 I just want to go on record as saying that
20 he's basically justifying his process.

21 **MR. STEWART:** Well, I'll just reiterate what
22 I said earlier. A lot of the value that we
23 get from Meyer is the very large number of
24 program documents that he integrates in his
25 history.

1 **MR. CLAWSON:** Right, and I understand that.
2 I just want to go on record as stating that we
3 do use him. And it's just like any site, we
4 use him as somewhat of a subject matter
5 expert. And as dose reconstructors or NIOSH
6 or whatever, if they can take that
7 information, and they can be able to justify
8 it and so forth just as we do in the process.
9 But I just wanted to make sure that we're
10 aware of that.

11 **MS. BEACH:** Thank you. And it's my
12 understanding we only have Elizabeth and Tom
13 until noon, so we'll go ahead and let you
14 start at this time.

15 **DR. ULSH:** I'll just give you an overview
16 and then let the people who really know what
17 they're talking about jump in. This is Brant
18 Ulsh at NIOSH. We sent out, I think on the 4th
19 of July, maybe the 3rd, our position paper, our
20 white paper on ceramic Plutonium-238 at Mound.
21 This was in response to a concern raised by
22 SC&A sometime ago in a paper that they in turn
23 produced, mainly Joyce Lipsztein.

24 And the question had to do with, well,
25 we have -- if I can briefly summarize -- we

1 have a method for estimating high-fired
2 Plutonium-239, but what we have at Mound is
3 Plutonium-238, and we have that certainly in
4 high-fired or ceramic forms. So do we have an
5 issue in terms of estimating dose from that
6 particular form of that particular
7 radionuclide.

8 One part of the concern was based on
9 an incident that happened at Los Alamos where
10 they took an RTG apart at Los Alamos, and they
11 observed some unusual behavior from the
12 Plutonium-238 in that incident. In that it
13 was initially at least very, very insoluble,
14 similar to what we see with high-fired
15 Plutonium-239.

16 Over time the solubility increased, in
17 other words more was leaving the lungs and
18 coming out in the urine and going to other
19 parts of the body. But that was an unusual
20 behavior, and the question was raised would we
21 expect to or have we looked to see whether
22 that is an issue at Mound.

23 So in response to that Tom LaBone and
24 Liz Brackett of the ORAU team put together
25 this white paper. And the bottom line, at

1 least the bottom line that I can come up with
2 from this paper, is that we looked at the
3 cases of the people who were involved at Los
4 Alamos, looked at their bioassay histories.
5 And then we also looked at approximately 900
6 cases from Mound. And we simply did not see
7 that kind of behavior in any of those cases
8 from Mound.

9 So one part of our position is that
10 this is just not an issue at Mound based on
11 what we see there. The second part of our
12 position though is even if you were concerned
13 about this particular material behaving this
14 way at Mound, it can be modeled. And that's
15 based in large part on an examination of this
16 material done by Tony James and published in
17 Health Physics.

18 So if we determined that that was an
19 issue, then we would simply be able to apply
20 that model. But it's our position that that
21 is not an issue based on the 900 cases that
22 we've looked at.

23 Tom and Liz, do you want to go into
24 any more depth or add anything?

25 **MR. LaBONE (by Telephone):** No, no, we'll

1 just see where the questions are.

2 **MR. CLAWSON:** Particulate size, was that an
3 issue?

4 **DR. ULSH:** I don't think it would be, Brad,
5 because we're basing it on urinalysis.

6 **MR. CLAWSON:** What's this cascade impact
7 factors?

8 **DR. ULSH:** Where are you looking?

9 **MR. CLAWSON:** It's just something I wrote.
10 It was in the work area.

11 **MR. CHEW:** We use that to determine particle
12 sizes. It's basically like different levels
13 of sieves that measures different micron sizes
14 and the air passes through it, and it gets
15 captured in a different level. But I don't
16 know where the question comes from.

17 **MR. CLAWSON:** Well, one of the things was
18 was that Mound purchased this cascade
19 impactor, but did not complete the evaluation
20 or process that was never used.

21 **MR. CHEW:** Never used? Yeah.

22 **MR. CLAWSON:** And so in theory they were
23 basically saying that they were questioning
24 the monitoring process they were having for
25 the high-fired oxides. Were they really

1 checking for what happened? Because they
2 bought a lot of this equipment, came in, but
3 it was never fully implemented or put into the
4 process.

5 **MR. CHEW:** Usually the cascade impactors
6 were, tried to be in close to near the
7 breathing zone. So you really have to have
8 enough activity to have release because of an
9 incident before the cascade impactor really
10 works.

11 **DR. ULSH:** But that's only an issue if
12 you're calculating internal doses or intakes
13 from air concentrations. It's not an issue,
14 as I understand it, -- and I'll let internal
15 dosimetrists correct me if I'm wrong -- that
16 is not an issue if you're looking at
17 urinalysis results or fecal results.

18 Is that correct, Liz or Tom?

19 **MS. BRACKETT (by Telephone):** You can use
20 different particle sizes, and you would get
21 different answers even from bioassay. But, I
22 mean, in general this issue, you know, we
23 assume five microns because that's the ICRP
24 default unless there is other information. A
25 lot of times it doesn't make a very large

1 difference given the relatively small range of
2 respirable particles.

3 **MR. CLAWSON:** Well, I guess it comes back to
4 how are they determining the proper PPE for
5 this process where this wasn't even
6 implemented into so we're sitting there saying
7 that we don't have, this process was never
8 implemented in and was never finished. How
9 are we determining what the proper PPE was to
10 the process? Were we, just to me it just kind
11 of shows that they were trying to determine
12 how the right size and everything else like
13 that. We want to make sure, how do we know
14 we've got the right PPE for all this?

15 **DR. ULSH:** We don't. And it doesn't matter
16 because we don't take that into account in a
17 dose reconstruction.

18 **MR. CHEW:** They wouldn't use that for the
19 PPE.

20 **MS. BRACKETT (by Telephone):** Right, I
21 misunderstood the question. Right, that does
22 not impact the dose reconstruction at all
23 based on bioassay.

24 **MR. CLAWSON:** Okay.

25 **MS. BEACH:** I have a comment. It was my

1 understanding -- and SC&A can probably answer
2 this -- it was my understanding that the LANL
3 was just an example in your white paper, and
4 it seems like it's being used a little bit
5 different with NIOSH. Do you --

6 **MR. FITZGERALD:** This is Joe, and I think
7 Joyce will come in, too. I think Brant
8 correctly characterized how we did this. We
9 wanted to demonstrate that there was some
10 question about whether a high-fired phenomenon
11 existed with PU-238 and offered the LANL case
12 as sort of an illustrative example of the
13 phenomena.

14 And our question, which I think NIOSH
15 responded to in the white paper, was whether
16 that phenomena has implications for Mound.
17 And I think the white paper draws the
18 distinction that the LANL example doesn't
19 apply phenomenologically to Mound. I think
20 that issue is helped by the white paper. I
21 think that that's something we weren't fully
22 aware of.

23 But where we are now is I think we can
24 agree conceptually that if one could model the
25 Mound cases as laid out and have perhaps the

1 so called Type J solubility model, the James
2 model, as an upper bound for those cases that
3 might come up that don't tack with the
4 conventional model, and that certainly would
5 be an approach.

6 I think our issue at this point is
7 more in the details of how that would be done.
8 You know, for example, in cases, we're
9 assuming the 896 cases, are they plutonium
10 cases pre-alpha spec? There wasn't much,
11 maybe I missed that in the white paper.

12 **MS. BRACKETT (by Telephone):** It's all of
13 the cases that were in, I believe it was
14 PURECON. And PURECON goes through 1980 --

15 **MR. FITZGERALD:** Yeah, that's sort of a
16 complete rendition then.

17 **MS. BRACKETT (by Telephone):** Right.

18 **MR. FITZGERALD:** I guess my question, and
19 Liz, I think you brought it up in some sense
20 in the first meeting, which is for those cases
21 that you don't have very much data for, maybe
22 not enough to really see that curve, how would
23 you go about determining whether or not the
24 conventional model would be applied?

25 It's the issue of this may be what

1 fits the vast majority of cases, but if you do
2 have some cases by virtue of the particular
3 compound or whatever that might not, would
4 they be identifiable do you believe with the
5 data you have? And what would you do if the
6 data wasn't sufficient for the IMBA fit? Just
7 more or less how would you implement this in
8 practice?

9 **MS. BRACKETT (by Telephone):** Well, I think
10 that the paper addresses that to some extent.
11 One issue is that in a lot of cases where
12 there aren't a lot of data, the results are
13 all less than the detection limit, and in
14 those cases we typically assign a chronic
15 intake. And there are some comparisons done
16 in there to show, I believe, that the -- is it
17 Type S that's limiting?

18 **MR. LaBONE (by Telephone):** After a certain
19 --

20 **MS. BRACKETT (by Telephone):** After a
21 certain amount of time one of the
22 conventional, you know, Type M or Type S is
23 limiting. If that's not the case, then we
24 could certainly apply the Type J and make that
25 assumption if it's outside of the bounds where

1 one of the others is limiting.

2 In the cases where there perhaps are
3 random positive results, one thing with this
4 type is that you see an increase in excretion
5 over time. So if you had an early result that
6 was positive, and then later results that are
7 negative, then that's an indication that you
8 don't have this material types because the
9 earlier excretion was larger than the later
10 excretion. So you can make a judgment based
11 on that if there were later data that showed
12 the excretion rate had dropped off.

13 **MR. FITZGERALD:** Now, I guess going to that
14 question, these 896 cases showed no early
15 insolubility. Have there been any cases that
16 suggest otherwise?

17 **MS. BRACKETT (by Telephone):** I'm sorry. I
18 didn't hear the first part of that.

19 **MR. FITZGERALD:** It's indicated that the 896
20 cases from PURECON showed none of this sort of
21 early insolubility phenomenon, sort of similar
22 to Los Alamos. Were there any cases -- this
23 is sort of the converse -- have there been any
24 cases that don't track with that conventional
25 experience?

1 **MR. LaBONE (by Telephone):** Any cases in the
2 complex or at Mound?

3 **MR. FITZGERALD:** No, no, at Mound.

4 **MR. LaBONE (by Telephone):** I know they have
5 situations at Mound where it kind of looks
6 like a mixture between a Type S and a Type M.
7 It's even more soluble than M, but it doesn't
8 look like the LANL excretion.

9 **MR. FITZGERALD:** So there would be ones that
10 would be less, it would be, in fact, bounded
11 by this model but none that go the other way
12 like the Los Alamos?

13 **MS. BRACKETT (by Telephone):** We have not
14 been able to identify any that would meet
15 that, that would be more insoluble basically
16 than the LANL cases. And we're still looking
17 at the literature. We're doing an
18 investigation of how the sources were
19 manufactured and comparing that to, we're
20 trying to also get more information on the Los
21 Alamos source that was involved in the
22 incident to show that we wouldn't encounter
23 anything that that was insoluble at Mound.

24 **MS. BEACH:** Kathy has a question.

25 **DR. LIPSZTEIN (by Telephone):** Can I say

1 something about --

2 **MR. FITZGERALD:** Oh, yeah, I was just going
3 to turn it over to you. I'm sorry.

4 **DR. LIPSZTEIN (by Telephone):** I think that
5 we agree with NIOSH's white paper that the
6 model is not the problematic issue, that it's
7 possible to decide which is the most claimant
8 favorable applicable model for Plutonium-238
9 ceramic. The problematic issue I think for
10 us, for SC&A, is how NIOSH is going to
11 recognize exposure to this type of Plutonium-
12 238, ceramic Plutonium-238, and how to decide
13 when and to whom to apply the model.

14 And we had the impression by looking
15 at the white paper that very rarely this would
16 be applied because you say all the time, NIOSH
17 says all the time that there isn't such cases.
18 There wasn't seen any such cases at Mound.
19 And our problem is that it's very, very
20 difficult to recognize exposures to ceramic
21 plutonium because of the different behavior.

22 What happens is that first you have a
23 delay on the urinary excretion. And then you
24 have an increase in the rate of the urinary
25 excretion for a few months until you reach a

1 peak. And then it follows by a decline at the
2 rate which could be consistent with a more
3 moderately soluble material. This kind of
4 behavior, which is very different from the
5 behavior of all other radionuclides, can be
6 confounded with chronic intakes.

7 We also at SC&A do not agree with you
8 that it's very rare. There are several cases
9 in the literature that describe exposure to
10 this kind of compound that has this different
11 kind of behavior that we call non-monotonical
12 because there is nothing, then there's an
13 increase, then there's a decrease. Normally,
14 what we expect is just the decrease. We have
15 several cases in the literature about the
16 exposure to uranium, to ^, to plutonium and
17 americium that have shown a similar kind of
18 behavior.

19 Also, NIOSH says on the white paper
20 that there were no other cases observed at Los
21 Alamos like this one. And, again, we have
22 published a paper in the literature from
23 Gunther Miller, who used to be the internal
24 dosimetry at Los Alamos, and he talked in a
25 published paper in "Radiation Detection

1 Dosimetry" in 2002, describing an accident
2 case that took place in Los Alamos in October
3 1980 which showed a urinary increase pattern
4 that could be interpreted using the Winkanine*
5 model or the Type J model as you call.

6 And Miller said in a personal
7 communication, Gunther Miller said that
8 initially there was no record of any incident
9 in the electronic database of Los Alamos.
10 However, after he decided to use this case in
11 a publication, there was a search for paper
12 incidents records. And an incident was found
13 to have occurred in October 31, 1980. And
14 this incident was not included in the
15 electronic database because the indicators of
16 the, that this was an incident way too low.
17 So thinking again that this is very difficult
18 to recognize.

19 And also at Mound there is a personal
20 communication also from a former health
21 physicist at Mound that said that he and
22 another case that he remembers that showed
23 exposure similar to Winknine* cases from
24 Plutonium-238. And there is also a
25 publication from Wood and Sheehan in the

1 American Industrial Hygiene Association about
2 five workers at Mound with release of
3 Plutonium-238. And there was also this
4 similar kind of behavior. The only thing is
5 that at Los Alamos the peak was after two-to-
6 three years and at Mound it was, the peak was
7 six-to-eight months after intake.

8 Hello?

9 **MS. BEACH:** Brant's going to respond.

10 **DR. LIPSZTEIN (by Telephone):** So what we
11 are very worried about, SC&A is very worried
12 about is because of this very difficult
13 pattern of excretion rate, it's very difficult
14 to recognize that there was any incident, and
15 you have to know there was an incident. Most
16 of the cases to recognize this kind of intake
17 instead of associating it with a chronic
18 intake. And unless there is a very good
19 database of incidents, and it could at earlier
20 times when it was not recognized because the
21 exposures were undetected. The MDA was very
22 high and all that, it could be mistaken.

23 This person that, this health
24 physicist that talked to us about the case
25 that he remembered that had the same

1 characteristics of the Winknine* Los Alamos
2 accident at Mound, he said he first modeled it
3 as a chronic intake rather than acute intake
4 because there was an increase in the urinary
5 concentrations for several months after it
6 became detected.

7 So what we're saying is that I don't
8 know if there wasn't any cases at Mound. I
9 think we've seen that it's very possible
10 because of the composition of the compounds
11 that were worked at Mound that there were
12 exposures to these kinds of compounds but just
13 they were not recognized, and they are very
14 difficult to recognize.

15 So what we want to know when is NIOSH
16 going to apply any model that is derived from
17 ^ Plutonium-238 and how it's going to be done
18 so that to recognize that there was exposure?
19 Because we don't think it's feasible to
20 recognize all cases of exposure to this kind
21 of Plutonium-238.

22 **DR. ULSH:** I'll respond to that. This is
23 Brant Ulsh. I'll respond to a few things that
24 you said.

25 First of all, when you started, Joyce,

1 you said that SC&A and NIOSH are in agreement
2 that the model could be applied, the Tony
3 James model could be applied. And based on --

4 **DR. LIPSZTEIN (by Telephone):** May I just
5 say something? A model can be applied. I
6 think we can study if Tony James is the most
7 claimant favorable model. But I think a model
8 can be applied.

9 **DR. ULSH:** Okay, well, in that case if one
10 accepts that the criteria of an SEC issue is
11 that doses cannot be reasonably bounded, and
12 if we can agree that that model can be
13 applied, this has just left the realm of an
14 SEC issue.

15 It is now a TBD issue that focuses on
16 your other questions which is where and when
17 would you apply such a model. Now, I would
18 say that looking at 900 cases and not finding
19 any evidence of it constitutes pretty strong
20 evidence that it was not at Mound, but I'll
21 let Liz and Tom address that in greater
22 detail.

23 You also mentioned a paper in the
24 Journal of American Industrial Hygiene
25 Association by Wood and Sheehan. I talked to

1 Sheehan less than a month ago when this issue,
2 when we were debating this issue within NIOSH
3 and asked him if he had ever seen anything
4 like this at Los Alamos, anything like this at
5 Mound. And he said, no, we've never seen
6 anything like that. So I don't know. I
7 haven't seen the paper that you referenced.
8 If you could send that citation to us we would
9 like to take a look at that.

10 **DR. LIPSZTEIN (by Telephone):** I will.

11 **DR. ULSH:** And not online, but also if you
12 could send us the name of the HP that you
13 talked to. I mean, for Privacy Act reasons we
14 don't want to do that in open session, but if
15 you could send us that that would be good.

16 Tom and Liz, do you want to talk about
17 our ability or the strength of the evidence of
18 the 900 cases at Mound, whether or not we
19 could detect that kind of thing?

20 **MR. LaBONE (by Telephone):** The first thing
21 I wanted to say was that, yeah, I need to see
22 the references that Joyce is talking about
23 because I went and looked for it. Not saying
24 I didn't miss anything but to take a look at
25 it, and so I'd be interested in seeing those

1 that describe LANL-type behavior in other
2 incidents.

3 The other thing is is that we looked
4 at as much of the published data as we could,
5 and there was the case, I believe it was from
6 Mound that was in Gil Metz' paper that was
7 described as a PU ceramic, and it's similar
8 basically to the LANL.

9 **MS. BRACKETT (by Telephone):** The paper
10 specifically said it was similar to the
11 material that was involved in the LANL
12 incident.

13 **MR. LaBONE (by Telephone):** And it didn't
14 have an excretion curve that looked anything
15 like the Wing Nine excretion curves. I think
16 where we're getting down to is just to hone in
17 on what exactly, what type of material gives
18 you this kind of excretion and where would you
19 expect to find it in the process of making
20 RTGs, for example. I think we need to get
21 more details on that.

22 **MS. BRACKETT (by Telephone):** Right, but
23 going back to what Brant said, we believe we
24 can model it if there is evidence that it's
25 present. We have a model and we can apply it.

1 **MR. FITZGERALD:** Now the OTIB or the
2 guidance piece that is being developed, is
3 that for the upper bound fit if there is a
4 need for an upper bound? Is that what that
5 particular additional piece is?

6 **DR. ULSH:** Joe, are you talking about our
7 white paper?

8 **MR. FITZGERALD:** No, I think at the last
9 meeting there was some reference to additional
10 guidance that was underway or being prepared.

11 **DR. ULSH:** No, that was in reference to this
12 white paper.

13 **MR. FITZGERALD:** Oh, this is the white
14 paper.

15 **DR. ULSH:** Right.

16 **MS. BRACKETT (by Telephone):** Right, I did
17 call it an OTIB, but what ended up happening
18 is that this is kind of the first step towards
19 developing an OTIB is drafting this white
20 paper. And then whatever is decided we would
21 probably turn that into an OTIB so it would be
22 guidance for the dose reconstructors.

23 **MS. BEACH:** Kathy would like to make a
24 comment or ask a question.

25 **MS. DeMERS:** Liz and Tom, you said you used

1 the PURECON data to do the analysis of the 896
2 individuals. Is that correct?

3 **MS. BRACKETT (by Telephone):** Well, it
4 wasn't so much an analysis as it was just a
5 plotting of the data, of all of the cases in
6 PURECON.

7 **MS. DeMERS:** Okay, it is my understanding
8 that the data prior to alpha spec was gross
9 alpha. Is that correct?

10 **MS. BRACKETT (by Telephone):** As far as I --
11 well, it was, there was chemistry done on it
12 so it's basically a gross plutonium, I
13 believe.

14 Don, maybe you remember better. Maybe
15 there are some other things that might be
16 present.

17 **MR. STEWART:** Yeah, gross alpha was a
18 technique used for a number of radionuclides
19 at Mound through about 1981.

20 **MS. DeMERS:** And in that case how did you
21 account for the other alpha emitters that
22 would be in the gross alpha activities, and
23 how would that affect the metabolic clock?

24 **MS. BRACKETT (by Telephone):** Well, my
25 understanding of the data for the most part is

1 that if the person was primarily working with
2 plutonium, then it would have been considered
3 a plutonium analysis. Other things --
4 although I'd have to go back and look because
5 I know that there was some chemistry done.
6 But in general then we have got overestimates
7 of what the bioassay results were. If the
8 person was working with other nuclides as
9 well, then we'd have an overestimate of what
10 was there.

11 But like I said, I would have to go
12 back and look to see what specifically is
13 included in the analyses because I'm certain
14 that there was chemistry done on them.

15 **DR. MAURO (by Telephone):** Liz, this is John
16 Mauro. I've got a real quick question for
17 you. Is this an issue that's more related to
18 having an incident where a person may have
19 experienced a fairly large intake but then,
20 let's say, shortly thereafter you see very
21 little activity in the urine. And then, of
22 course, later it might go higher because of
23 this unique J function? Or is this also an
24 issue if a person were exposed to this
25 material under chronic conditions?

1 **MS. BRACKETT (by Telephone):** Well, I guess
2 it depends on what you mean is it an issue.

3 **DR. MAURO (by Telephone):** Well, let's say,
4 I guess what I'm hearing is that certainly if
5 you do have this material that has this
6 unusual clearance behavior, and you have an
7 incident, a person is exposed, and then you
8 monitor his urine following exposure. And
9 let's say you don't see anything for a few
10 months, and then all of a sudden you start to
11 see something, I assume that that would be
12 indicative that maybe we do have this unusual
13 form of plutonium.

14 However, what I'm not hearing is
15 whether that same problem exists if a person
16 is just working with this unusual form of
17 plutonium on a day-to-day basis and maybe
18 getting some small, chronic intake. Is that
19 something of concern here also in terms of
20 knowing that this is occurring? And if we do
21 know that this is occurring, does that change
22 the way in which you would reconstruct that
23 person's doses?

24 **MS. BRACKETT (by Telephone):** If you look at
25 the white paper it shows that, in fact, if you

1 compare chronic intakes of M, this material,
2 which we're calling J and S, then J is not the
3 claimant favorable assumption for a chronic
4 intake for most cases. Tom did an analysis of
5 various scenarios because it changes depending
6 on how long the exposure is. But for many
7 scenarios that we typically encounter it would
8 not be claimant favorable so using M or S is
9 more claimant favorable. So it's not as much
10 of concern if it's truly a chronic exposure.

11 **DR. MAURO (by Telephone):** So then the
12 subject we're really talking about is
13 something that's more of concern, if it is of
14 concern at all, is under some type of incident
15 where there is a short-term exposure, perhaps
16 relatively high levels of plutonium, but you
17 just don't see it in the urine following the
18 incident. That's the issue. Maybe I'm
19 oversimplifying.

20 **MR. LaBONE (by Telephone):** I'm not that
21 familiar with the protocols at Mound, but if
22 you have an incident, and you know something
23 just occurred, and if you take urine samples,
24 fecal samples and chest counts, you would see
25 big intakes. You would, the fecal samples

1 will work for this material.

2 **DR. LIPSZTEIN (by Telephone):** But it will
3 be very difficult to recognize it was this
4 material. That's the problem. It's very,
5 very difficult to recognize it. And the
6 problem is if you don't recognize it to whom
7 should you apply. And also this question of
8 the chronic intake, I think that it depends on
9 the time of the intake and depends on the
10 model that you use.

11 For example, the case that I have seen
12 for Mound the peak excretion is different from
13 the peak excretion for Los Alamos. So I don't
14 know what is the best model to apply to Mound.
15 What I said is that I agree there is a model.
16 It's possible to model. I don't know which is
17 the most conservative for which cases. The
18 big problematic issue is how to recognize and
19 to whom to apply.

20 And you cannot say that it's rare. We
21 eventually will apply if it happens. How do
22 you recognize ^ will apply if it is very
23 difficult to have it, and if you'll know that
24 the Mound people were exposed to this type of
25 compound.

1 **MR. LaBONE (by Telephone):** John asked, what
2 I heard him say was he asked about an
3 incident. And so if I have a cam goes off,
4 for example, and I collect a urine sample.
5 And if I only collect urine samples, I agree
6 with you, it may be difficult to decide if
7 something happened. And LANL has a long
8 history of only collecting urine samples when
9 they do analyses just in contrast. But now,
10 if I collect a fecal sample, I'm going to
11 clearly know that there's a problem. If I do
12 a chest count, if there's a big problem, I'm
13 going to know it.

14 And so it depends upon the data you
15 collect at the time of the incident. So if
16 you don't collect the proper data, yeah, it's
17 going to be tough to decide that something
18 happened for an incident. So it depends upon
19 the incident and what they did.

20 **DR. LIPSZTEIN (by Telephone):** Yeah, the
21 problem is that sometimes you don't recognize
22 there was any incident like it happened in
23 1980 in Los Alamos. What I mean is that
24 you'll see something on the fecal, but you
25 won't recognize it's this kind of exposure.

1 And the other thing is the chest measurement
2 of Plutonium-238, you know, it's very
3 difficult. It's not that it cannot be done,
4 but it's even now today with the very modern
5 techniques for lung counting it's very
6 difficult to measure Plutonium-238 unless
7 there is a huge exposure.

8 **MR. LaBONE (by Telephone):** The people in
9 Wing Nine had, you know, a number of them had
10 positive chest counts. So if --

11 **DR. LIPSZTEIN (by Telephone):** Yeah, yeah,
12 I'm not saying it's not feasible. What I'm
13 saying is that today, now, even today with the
14 modern technique it's very difficult. You
15 have to have a huge exposure to measure
16 Plutonium-238 in the lungs.

17 So imagine at the time it was not
18 recognized there was an incident with this
19 kind of compounds, and they didn't measure it
20 right, and the MDAs were very high. And even
21 in the TBD for internal dosimetry it says that
22 there was a very high variability and you
23 cannot trust Plutonium-238 before 1994.

24 So what is a problematic issue here is
25 how to recognize and to whom apply this Type J

1 or any model that is derived to be applied at
2 Mound. I don't think this is solved yet.

3 **MR. CLAWSON:** This is Brad. Excuse me for
4 my ignorance and stuff like that, but I have a
5 question. And I've seen with Mound, we have
6 tremendous different nuclides that we're
7 looking for and everything else like that.
8 There's a whole broad spectrum.

9 Can you do this with just a -- I see
10 some of them that the best way is a urine
11 sample and the other one's a bioassay. Can
12 you do all these with just one or do you have
13 to have a combination of them both to be able
14 to do a representative sample? I know that a
15 lot of times we've said, well, if these people
16 are working with plutonium, we'd be looking at
17 this.

18 But there's many of them that worked
19 with everything, so are they going to have to
20 have a combination sample to be able to do
21 this? Because going through the O drive and
22 stuff like that, I just see some of them as
23 urine data, and I don't see anything of the
24 combination or so forth. I'm just wondering
25 how are we looking for everything that we

1 should be?

2 **MR. STEWART:** I think Liz would be a good
3 one to answer that.

4 **MS. BRACKETT (by Telephone):** I'm not sure I
5 understand the question because urine is
6 bioassay. You said some people have urine,
7 some have bioassay, but urine --

8 **MR. CLAWSON:** How about fecal? Do you need
9 to have them both to be able to do the whole
10 spectrum that you should be looking for or can
11 you do it with just one?

12 **MS. BRACKETT (by Telephone):** You can do it
13 with just urine. That's typically what you
14 would find at most sites is just urine
15 samples. Fecal was typically used in the
16 event of an incident to follow up on things,
17 and it does provide you additional
18 information. But it's not necessary to be
19 able to do a dose assessment.

20 **MR. CLAWSON:** So you're telling me that with
21 a urine sample you'll be able to see all the
22 spectrum of the things that we're working with
23 at Mound.

24 **MS. BRACKETT (by Telephone):** I guess I'm
25 still not clear what you're -- are you talking

1 about different radionuclides?

2 **MR. CLAWSON:** Yes. Because you know as well
3 as I do that we had plutonium there. We had -
4 -

5 **DR. ULSH:** Uranium.

6 **MR. CLAWSON:** -- uranium. We had tritium.
7 We had --

8 **MS. BRACKETT (by Telephone):** Right, and
9 there's different types of urine samples for
10 each of those. There are specifically
11 polonium urine samples. There were
12 specifically uranium urine samples. The
13 plutonium urine samples do pull out a few
14 other things, but it does not include polonium
15 or tritium because tritium is a beta emitter,
16 and you need to do a different type of
17 analysis.

18 So there's urine sampling for all of
19 them. It's just different chemistry is done
20 on the samples, and so you get a more specific
21 result for the specific nuclide. So if a
22 person were exposed to many different things,
23 then you would need to have different types of
24 urine samples to do the full assessment.

25 **MR. CLAWSON:** Okay, because the data I've

1 seen is they're using urine samples for one
2 thing, but can you take like one urine sample
3 and do multiple different checks?

4 **MS. BRACKETT (by Telephone):** Yes.

5 **MR. CLAWSON:** Or is there a quantity amount
6 that they're getting into? Because I beg to
7 differ because my process at Idaho is urine's
8 very rarely used, but a fecal sample is the
9 preferred one, and that's --

10 **MS. BRACKETT (by Telephone):** Idaho is
11 unique in that.

12 **MR. CLAWSON:** We're very unique. It's a
13 different story, because I just want, because
14 I'm trying to use my site information back to
15 what this is. And going through the O drive
16 and stuff like that, I see a lot of urine data
17 but not any fecal.

18 **MS. BRACKETT (by Telephone):** Fecal is much
19 more difficult to interpret for routine
20 samples. It's very useful for incidents, but
21 on a routine basis it's much more variable
22 than urine is as far as what you see from day
23 to day and individual excretion patterns.

24 And so it's a lot more difficult to
25 pin down what's going on. That's why -- and

1 workers frequently object to submitting fecal
2 samples. It usually takes quite a PR campaign
3 to get those done on a routine basis. So
4 urine is what is typically used for doing
5 assessments.

6 **MR. CLAWSON:** Okay, and that brings up
7 another question. Have we seen at Mound when
8 an individual is requested to do one of these
9 samples, how are they determining what process
10 that they would use to do this, by their work
11 locations or? You know, and this gets back to
12 their procedures of did they have, like this
13 facility. I know my facility, when they have
14 me do one, they're looking for these certain
15 things that we work with. And I'm wondering
16 if we have anything showing that.

17 **DR. ULSH:** Liz, I'll let you jump in in just
18 a second.

19 But you're right, Brad, that they do
20 base what the required urinalysis, what's
21 required based on where they're working. For
22 instance, if you're working in a tritium area,
23 you're going to be required to give a tritium
24 urinalysis. I would say that it's certainly
25 true that different kinds of analysis are

1 required, but if you're doing, like in the
2 early years when they did gross alpha prior to
3 1980.

4 Let's say a person was working with
5 both plutonium and uranium, and you see a
6 certain amount of activity in that urine.
7 Well, was it uranium or was it plutonium?
8 Well, what we're going to do is take the most
9 claimant favorable of the possible options.
10 So if he's working with both, and he's got a,
11 I don't know, a particular kind of cancer, if
12 plutonium is the most favorable of the
13 possible options, we're going to assign
14 plutonium dose. I don't know if that kind of
15 answers your question.

16 **MR. CLAWSON:** I guess my frustration is, and
17 understand, I'm not a health physicist, and I
18 respect everything because a lot of it's new
19 to me, but in going through the O drive and so
20 forth, especially the MESH database and so
21 forth like that, it shows that certain people,
22 they were checked for these things, but we had
23 so many other nuclides that were there.

24 And I was wondering are they going to,
25 you know, they weren't looking for claimant

1 favorable or anything else like that. How are
2 we assured that they were monitored for what
3 they should have because I've been going
4 through some of the employees that we
5 interviewed and so forth like that. They went
6 to several of these areas but they were
7 assigned a certain area, and that's what they
8 were sampled for, but they were working in
9 these other areas.

10 I'm just wondering how we take into
11 consideration that they were doing work in
12 these other areas. Because one of the
13 comments that came out was I worked in this
14 building, and this was the type sample that I
15 was supposed to provide for them and so forth.
16 But I also worked with this compound over in
17 this area because it was part of our testing
18 that we did and so forth like that.

19 And I'm just wondering how are we
20 assured -- and I guess this may get back to QA
21 or whatever like that -- that the people were
22 monitored for the right substances and then do
23 the process. Because in looking at this
24 that'd be quite a bit of urine to be able to
25 provide to do all these. That's why I was

1 wondering if we have to have them both to be
2 able to make a good judgment of what we're
3 really seeing.

4 **DR. ULSH:** I think, Brad, you're talking
5 about a couple of issues that we're going to
6 cover later in the day, I think.

7 **MR. CLAWSON:** Okay, well maybe --

8 **DR. ULSH:** Well, one is the roadmap document
9 that we've produced, and that goes through the
10 different processes, what radionuclides were
11 involved and how they were sampled.

12 The other thing I'm guessing that you
13 might be thinking about is the Price-Anderson
14 Act violations because those were related to
15 that kind of an issue. So maybe we can talk
16 about that later in the afternoon.

17 **MR. CLAWSON:** Okay. That sounds good. I
18 was just wondering if -- I know what we do a
19 lot of times if we have an incident. You're
20 correct. We submit both, but also, too, at
21 ours they kind of have to have both to be able
22 to see what we really had. And I was
23 wondering if this is the same thing here.

24 **MR. STEWART:** Not so much. One of the
25 reasons that fecal is useful is that it gives

1 you a quick indication of what went inside a
2 person. What a person breathed in. What
3 makes it inaccurate is that it includes both
4 respirable and non-respirable particles. If
5 you inhale a large chunk of something, it's
6 typically excreted in the feces.

7 We're more worried from the standpoint
8 of organ dose. What actually entered the
9 system. If we're trying to estimate a dose to
10 the liver, we need to know what was in the
11 blood because the liver would only absorb
12 plutonium from the blood. And urinalysis is
13 our best indicator of that. And for that
14 reason for dose reconstruction, we almost
15 always use exclusively urine data.

16 **MR. SCHOFIELD:** Okay, I've got a question.
17 Here's a scenario that I'm actually familiar
18 with. There's a leak of some kind. They do
19 either nasal swipes or facial swabs. Don't
20 find anything. Six-to-nine months down the
21 road when they submit this urine sample,
22 bingo, there's a positive. If you're doing
23 dose reconstruction, you find this in a
24 claimant's record, are you going to backtrack
25 to the date of their previous urine sample

1 where it was analyzed and effectually say,
2 okay, you got this at this date and made it
3 claimant friendly?

4 **MR. STEWART:** We use all urine data when we
5 do a dose analysis based on urinalysis. We
6 use all data. Typically, what we do is we
7 overestimate the dose. If you'll look at a
8 graph of urine dots all over the place,
9 typically, what we do is we take the highest
10 dot, and we make a curve, and that's how we
11 assign the dose. It's very simple to do that.
12 If we need to reduce that dose, we could do a
13 more accurate estimate.

14 And we do review incident reports, and
15 these typically include nasal swipe results.
16 So we go back, and we can make that
17 connection. So okay, they took some special
18 bioassay, took a nasal swipe on June 5th, 1957,
19 and sure enough, he's got a positive
20 urinalysis dose here. We can go back and
21 reconstruct that from that data point.

22 **MR. SCHOFIELD:** Okay.

23 **MS. BEACH:** Can we have a question from
24 Kathy?

25 **MS. DeMERS:** Liz, do you remember if they

1 actually documented the simulated lung fluid
2 dissolution rates at Mound, that study that
3 they did?

4 **MS. BRACKETT (by Telephone):** I don't
5 remember.

6 **MR. LaBONE (by Telephone):** I've never seen
7 it.

8 **MS. BRACKETT (by Telephone):** I don't recall
9 seeing it recently. I don't remember about
10 the past, so I'm not sure.

11 **MS. DeMERS:** Who would we ask about that?

12 **MS. BRACKETT (by Telephone):** I don't know.
13 It would have to go through the Records people
14 I guess.

15 **MS. DeMERS:** I mean as far as the process
16 that they went through. Is there someone that
17 was responsible for it?

18 **MS. BRACKETT (by Telephone):** I don't know.
19 I wasn't involved in that at all.

20 **MS. DeMERS:** Okay.

21 **MS. BEACH:** What was it called again, Kathy?

22 **MS. DeMERS:** Simulated lung fluid
23 dissolution rates.

24 **MR. CHEW:** Do you have that ^ information,
25 Kathy?

1 **MS. DeMERS:** I don't.

2 **MR. CHEW:** You don't. You just know that it
3 existed?

4 **MS. DeMERS:** Yes.

5 **MS. BEACH:** Is that something we need to ask
6 for?

7 **DR. ULSH:** I don't know. What's it related
8 to? Is it related to Plutonium-238?

9 **MS. DeMERS:** Yes, it is.

10 **MR. STEWART:** It has to do with absorption
11 types at Mound?

12 **MS. DeMERS:** Yes.

13 **MR. STEWART:** We typically assume claimant
14 favorable absorption rates. And the TBD does
15 have some recommendations as to the absorption
16 rates that would apply to a given process. We
17 typically use the most claimant favorable
18 absorption rate.

19 **DR. ULSH:** But if that's of interest to
20 SC&A, you guys could include it in your
21 keyword searches. We could just proceed that
22 way if that's of interest to you.

23 **MS. BRACKETT (by Telephone):** I think she's
24 asking because of this issue with the
25 insoluble material. That's what it would

1 relate to that we were discussing but got off
2 track on.

3 **MR. CLAWSON:** I'm sorry. It's my fault.

4 **MS. BRACKETT (by Telephone):** Tom and I need
5 to go, so are there any last questions that
6 you have for us?

7 **DR. MAURO (by Telephone):** Liz, this is John
8 Mauro. Yes, I do, real quick one for you.
9 When you gathered the data for the 900 cases
10 and plotted it and was looking for patterns,
11 did you also simultaneously look for fecal
12 analysis that would go with some of those
13 cases? What I'm getting at is it sounds like
14 that the pattern itself in urine may not
15 always be that conclusive that we do or do not
16 have this problem, from listening to Joyce.

17 But I also heard that, well, if this
18 situation does exist where you have relatively
19 large intake, nothing observed in the urine,
20 but you would see it in the feces. So what
21 I'm getting at is, it seems to me one of the
22 most important points that are being made in
23 this conversation is that you folks don't
24 believe that this phenomenon really exists at
25 Mound or did exist at Mound based on looking

1 at the pattern.

2 But then I heard that, well, sometimes
3 the pattern could fool you. And then I heard
4 the fecal analysis would be the telltale sign.
5 If you saw high levels in feces and relatively
6 low levels in urine, at least for a period of
7 months after the initial intake, that would be
8 an indication that you might have this
9 phenomenon occurring. Am I characterizing
10 this correctly?

11 **DR. ULSH:** No.

12 **DR. MAURO (by Telephone):** First of all was
13 my question clear?

14 **DR. ULSH:** Well, yeah, your question is
15 clear, John. This is Brant. I think there is
16 perhaps some -- I don't know, disagreement
17 might be too strong a word, but we're
18 confident, I think, in the 900 cases that we
19 looked at -- Joyce has expressed some doubt
20 about our ability to detect it if it occurred.
21 However, fecal sampling is a totally different
22 subject. It's not relevant to this Plutonium-
23 238 discussion I don't think.

24 **DR. MAURO (by Telephone):** The reason I
25 asked it, Brant, is that what I heard is that

1 if you did inhale this material, it would pass
2 through the GI tract and be collected in the
3 feces. But it may not necessarily readily be
4 found in the urine even if it was in
5 relatively large quantities.

6 **DR. ULSH:** Well, only if it was of large
7 particle size. That's what Don referred to
8 earlier. It wouldn't necessarily be the case.
9 That's not really related to whether it's high
10 fired or not. Once it gets in the lung, at
11 least the material at LANL, it was very
12 insoluble so it went to the lung, and it just
13 stayed in the lung. It's not that it came out
14 necessarily in the feces. It just didn't go
15 anywhere. And the question is, would that be
16 the case at Mound as well. So it's not really
17 related to the fecal sampling.

18 **DR. MAURO (by Telephone):** Okay, I may have
19 misunderstood the concept. I thought that
20 would be a telltale sign. If that's
21 incorrect, I'll withdraw my question.

22 **DR. ULSH:** Am I right? Or, Don?

23 **MR. STEWART:** Well, a positive fecal would
24 not itself suggest that you had the Type J
25 exposure. It just says that you have non-

1 respirable particles.

2 **MS. BRACKETT (by Telephone):** If you catch
3 it immediately following an incident, you
4 would always expect to find something in the
5 feces. That's going to be pretty sensitive
6 the first several days following intake.

7 **DR. MAURO (by Telephone):** And that's what
8 I'm hearing is that you may see that and not
9 see anything in the urine, and that would be
10 perfectly appropriate if the particle sizes
11 were large.

12 **MR. STEWART:** Right.

13 **DR. MAURO (by Telephone):** If they were
14 small though I'm assuming that you would see
15 something in the urine, and if the particle
16 size was small, and you didn't see anything in
17 the urine, then that would start to raise some
18 suspicion maybe we're dealing with the special
19 form of plutonium.

20 **DR. LIPSZTEIN (by Telephone):** The problem
21 is it's very difficult to recognize because of
22 the special pattern. So if you don't have
23 anything, you don't assume there was any
24 incident. That's what happened on the 1980
25 incident in Los Alamos. And they didn't

1 recognize even taking nasal swipes.

2 And so it could look like it was --
3 and after as the urine excretion rate starts
4 to increase, then starts to increase before it
5 decreases, it could be confounded with a
6 chronic intake when the urine excretion rate
7 increases. And so it's just difficult to
8 recognize it.

9 So I think the whole point is even if
10 you have the database, unless you know there
11 was an incident, then it would be very
12 difficult to recognize it. And the comparison
13 that is done with the Tony James' model with
14 the chronic intakes for Type S and Type M
15 depends on what the absorption rates that
16 you're applying for the lung model.

17 So, you know, to compare it favorably
18 or not favorably with one kind or another kind
19 of exposure, and I don't know if Tony James'
20 model is the best one. And the other thing is
21 that the Tony James' model was used with a
22 five particle size. And Miller, Gunter Miller
23 did a model where there were different
24 absorption parameters with the same excretion
25 rate, but he used 0.5 for particle size.

1 I don't know which one is the correct
2 one. If you don't measure the particle size,
3 you don't know if it's 0.5 and five, and it
4 makes a big difference.

5 **MS. BEACH:** I apologize for cutting this
6 short. I know we are losing Liz and Tom, if
7 they have not already left us. I would like
8 to recap, however, and make sure that we
9 capture everything that needs to be, the
10 action items. I know we've got Joyce
11 supplying NIOSH with a couple of documents.

12 Joyce, I don't know if your question
13 was answered on how to recognize the model and
14 how to apply the model. I believe that would
15 be for NIOSH to deliver.

16 **MR. FITZGERALD:** Can I interject?

17 **MS. BEACH:** Yes, please.

18 **MR. FITZGERALD:** I think we having gotten
19 this pretty thorough white paper and have gone
20 through it for the past week, I think what we
21 owe the work group is a, is to frame up this
22 issue very clearly. I mean, we've had a lot
23 of give and take. This is very useful. But I
24 think what we need to do, and this would be
25 relatively brief. This wouldn't be more than

1 a couple of weeks from now, but I think what
2 we need to do is frame up this question of
3 being able to identify who it would apply to
4 and how it would be done, just lay that out
5 very clearly with references.

6 And I also would like to provide NIOSH
7 some case examples that might represent
8 exceptions to the convention of the experience
9 at Mound, this would be Mound workers we have
10 some data for that we would provide just as
11 illustrative examples of exceptions to this.
12 And I think that would be the response.

13 I don't think it changes our general
14 conclusion that a model can be applied. I
15 think I said that up front. Conceptually, I
16 think we're in agreement there. But whether
17 it can be applied with sufficient accuracy I
18 think is where we're at now. And I think
19 these issues speak to that.

20 I would suggest we can provide the
21 references that Joyce mentioned immediately,
22 but I'd like to go ahead and frame this up for
23 the work group with some of these case
24 examples over the next couple weeks and relay
25 that over through the work group to NIOSH to

1 support whatever final dialogue we have on
2 this.

3 **MS. BEACH:** Great, that was actually what I
4 was going to say but you said it much better.
5 We do have somebody who has put us on hold, I
6 believe. So if you have done that, please
7 take us off hold.

8 **MR. CLAWSON:** They're on hold, so they won't
9 hear us.

10 **MR. FITZGERALD:** The second part of that is
11 -- maybe this was, maybe Brant can answer this
12 -- the 896 cases that were reviewed off of
13 PURECON, have they been, Brant, sorted in a
14 separate file that might be available on the O
15 drive?

16 **DR. ULSH:** Tom and Liz, are you still there?

17 **MS. BRACKETT (by Telephone):** Yeah, we're
18 still here. I guess we have a PDF file that
19 has the plots of all of them. It's just, you
20 know, a quick plotting of all of the results
21 for the people. We haven't put it on the O
22 drive, but we can.

23 **MR. FITZGERALD:** I think that would be
24 helpful. I know it might be repetitive, but
25 if it's not too much, too onerous, that would

1 be helpful to see some of these firsthand just
2 as a case example.

3 **MS. BRACKETT (by Telephone):** No problem.

4 **MS. BEACH:** Is there anything else?

5 **MR. FITZGERALD:** No, and we'll take the
6 action to provide references as soon as Joyce
7 can provide them via e-mail, and then we'll
8 frame this up and provide a, more or less a
9 response to the white paper that addresses the
10 issues we just discussed.

11 **MS. BEACH:** Thank you.

12 Any other comments?

13 (no response)

14 **MS. BEACH:** Okay, we will move on from nine.

15 How are we doing on time?

16 **DR. ULSH:** Twelve.

17 **MS. BEACH:** We're actually scheduled 12:30
18 to one. How much time do you think Price
19 Anderson will take? It's number 21.

20 **DR. ULSH:** It's probably not going to be
21 quick.

22 **MS. BEACH:** Okay, let's go ahead and break
23 for lunch. We will resume at 1:15. Thank
24 you.

25 (Whereupon, a lunch break was taken from

1 12:15 p.m. until 1:15 p.m.)

2 **MS. BEACH:** We are now ready to resume. We
3 are going to continue on as the agenda states
4 with the issue number 21.

SUMMARY OF THE PRICE-ANDERSON ACT VIOLATIONS

5 **MATRIX ISSUE #21**

6 And Brant, are you going to take the
7 lead and start on this?

8 **DR. ULSH:** Yes, I'll start and quickly turn
9 it over to Gene Potter.

10 This deals with the Price-Anderson Act
11 violations that happened at Mound. If you all
12 recall, when I presented our evaluation report
13 at the Las Vegas Board meeting, that was one
14 issue that we had reserved judgment on because
15 we wanted to take a look at these particular
16 violations and see whether or not they had SEC
17 implications. That was the real question.

18 For those of you not familiar with the
19 Price-Anderson Act and what it involves,
20 basically, it's a broad umbrella that covers
21 violations that occur by contractors and DOE
22 goes in and performs enforcement actions. Not
23 all of those, in fact, the majority of those
24 are probably not relevant to what we do in
25 terms of dose reconstruction.

1 But I was not confident that that was
2 the case here because these Price-Anderson Act
3 violations dealt specifically with issues that
4 related to Mound's bioassay program. And so
5 we wanted to reserve judgment on that just
6 because there was a possibility that it might
7 be relevant to dose reconstruction and SEC.

8 So the problem that we faced with this
9 issue was that there appeared to be multiple
10 Price-Anderson Act violations, and we were
11 having a hard time getting our arms around
12 what was what in terms of which subject each
13 violation dealt with. So Gene Potter has gone
14 through -- geez, I don't know --

15 **MR. POTTER (by Telephone):** Nine hundred
16 pages.

17 **DR. ULSH:** -- 900 pages of Price-Anderson
18 Act documentation and come up with a pretty
19 concise summary.

20 Gene, are you out there?

21 **MR. POTTER (by Telephone):** Yes, I am, and
22 it was that one reference ID that is in the
23 documentation that's been provided, 37-7-33,
24 was actually over 2,200 pages.

25 **DR. ULSH:** Okay, so it was a lot.

1 Gene, if you're ready, I would just
2 like to ask you to perhaps walk us through the
3 report that you've prepared. This was sent
4 out to the working group and to SC&A on --
5 well, I don't know, a couple of weeks ago.
6 So, Gene, go ahead.

7 **MR. POTTER (by Telephone):** Just briefly, in
8 the documentation there were three enforcement
9 actions that you see listed in three different
10 sections of what you have. And I can just
11 read the brief description of each of those.
12 I don't think it's probably a good use of the
13 working group's time if people had a chance to
14 review this for me to go into a great deal of
15 detail. Perhaps we could spend more time on
16 questions if there are any.

17 Anyway, the first violation occurred
18 in 1997, and that was near the start of the
19 Price-Anderson program which you'll recall DOE
20 had to publish a rule in the Federal Register
21 which was incorporated into the Code of
22 Federal Regulations, 10 CFR 835, so that a
23 basis would be available for taking these
24 enforcement actions.

25 The first violation is as I said in

1 1997. Mound was fined \$112,500 and a number
2 of programmatic deficiencies involving
3 administration of Mound's bioassay program and
4 methodologies used for determining and
5 assigning internal dose to workers, including
6 minimum detectable activities were not
7 current, decision levels were not in use, and
8 some individuals did receive bioassay as
9 required by the RWPs.

10 And you see in the documentation
11 there's sort of a timeline, the dates the
12 things occurred. And then Mound was required
13 to respond in writing to make the corrective
14 actions for these items. And if we skip down
15 to -- my impression at least was of what the
16 SEC implications might have been from this
17 first group of violations was that we can
18 determine a superset of the workers who may
19 have been involved in signing in on rosters
20 that did not receive the appropriate bioassay.

21 We have documentation in MESH and
22 other places where we can make this
23 determination. And so this does not appear to
24 be a SEC issue should the working group
25 determine that the follow-up actions were

1 inadequate in some way. The MDA and the
2 decision-level issue, again, does not appear
3 to be an SEC issue. There were, Mound went
4 back and made some corrections to the record.
5 And the fact that they were comparing the
6 results to the MDA instead of the decision
7 level is not an issue for NIOSH dose
8 reconstructions.

9 **DR. ULSH:** Okay, Gene, that might be a good
10 place to stop.

11 **MS. CHANG:** This is Chia-Chia Chang, the
12 DFO, please do not put us on hold. If you're
13 on hold, you are obviously not hearing me.
14 I'm going to call and ask for this line to be,
15 the line with the beeping, to be removed. But
16 this is a reminder to everybody to please put
17 yourself on mute, and if you have to leave for
18 a call, please hang up, thanks.

19 **DR. ULSH:** All right, Gene, go ahead.

20 **MR. POTTER (by Telephone):** Did we want to
21 stop there for questions on this first
22 violation?

23 **MS. BEACH:** Yeah, I do have a question. I'm
24 reading on page three of 16, last sentence.
25 It says, however, the list was not located and

1 DOE specifically requested that personnel
2 identifiers not be used. Is that the same
3 list you were just saying that you were able
4 to come up with?

5 **MR. POTTER (by Telephone):** Yeah, that
6 refers to part of the corrective actions were
7 taken. So we don't know who specifically the
8 76 workers were if that's the number.
9 However, we can determine everyone who signed
10 in on those RWPs which are named in the
11 documentation. So we can determine a superset
12 of who may have been affected.

13 **MS. BEACH:** Okay, so you're going to do that
14 from the RWPs?

15 **MR. POTTER (by Telephone):** Right, from the
16 sign-in rosters and RWPs.

17 **MS. BEACH:** Okay, thank you.

18 **MR. POTTER (by Telephone):** All right, the
19 second violation occurred in 1998 for which
20 Mound was fined \$165,000. And the brief
21 description, if you want to follow along.
22 Radiological control deficiencies during the
23 WD-Building filter change and bioassay program
24 deficiencies were identified. Work control
25 problems included: work control documents did

1 not have adequate management review contrary
2 to established procedures, an ALARA review was
3 not conducted, a timely pre-job survey of the
4 area was not conducted, and appropriate air
5 monitoring equipment was not used. Bioassay
6 deficiencies included the failure to provide
7 timely analyses to numerous workers: namely,
8 delays in processing Americium-241 results,
9 delays in return of off-site vendor bioassay
10 results, and delays in certification of vendor
11 bioassay data. In addition, there were
12 problems with the implementation of new alpha
13 spectroscopy system that led to calculational
14 errors.

15 And so here we have each of the events
16 sort of, in the additional details section
17 sort of dealt with individually. The WD-
18 Building filter change was an issue where they
19 did not have real-time air monitoring. And
20 later they found out that they had exceeded
21 the stop work levels and basically the issue
22 there.

23 And the bioassay program issues
24 revolved around replacing part of the alpha
25 spec counting capability, and they did not

1 anticipate how long of a delay. They had to
2 shut down some of their existing equipment,
3 and they did not anticipate the delay, the
4 extent of the delay, and this led to a backlog
5 of bioassay samples which resulted in Mound
6 exceeding their own guidelines or requirements
7 for when results were to be determined and
8 reported.

9 And let me see. Let me skip down to,
10 have Mound's response. The SEC implications
11 for the filter change were just a very limited
12 number of workers. From the document in MESH
13 we have we can determine exactly who those
14 seven workers were. Follow-up bioassay
15 samples were collected so this shouldn't be an
16 SEC issue.

17 **MS. BEACH:** I do have one question for you.
18 Back on page four of 16, the additional
19 details, last sentence it says, during the
20 pre-filter replacement, while the exhaust fans
21 were shut down, workers consequently,
22 personnel routinely entered the building on
23 the 12th without wearing full face respirators.
24 They would also not have been on an RWP. How
25 are you going to account for them?

1 **MR. POTTER (by Telephone):** Yes, that is an
2 issue; however, let's see, I believe I put a
3 statement in the first paragraph under SEC
4 implications. This has not been done to my
5 knowledge, but the data from the workers who
6 were monitored could possibly be used to bound
7 the doses for any other workers who entered
8 the building while the ventilation was shut
9 down.

10 **MR. CLAWSON:** So would that be using a
11 coworker data or I didn't think we had a model
12 for that.

13 **DR. ULSH:** We don't have an external
14 coworker data.

15 **MR. CLAWSON:** You have an internal?

16 **MS. BEACH:** I still am worried that we won't
17 be able to identify those workers unless they
18 knew they were in there at that certain time
19 period and told you they were in there. So
20 I'm not clear how you're going to address that
21 in that aspect.

22 **MR. POTTER (by Telephone):** I don't have a
23 response for that.

24 **DR. ULSH:** Josie, I'm reading the part that
25 you referred to. During the pre-filter

1 replacement while exhaust fans were shut down,
2 the building entry requirement for full face
3 respirators was not posted. As a consequence,
4 personnel routinely entered the building on
5 February 12th, 1998, without wearing full face
6 respirators as required.

7 So, Gene, are we saying here that that
8 part of the issue is that people should have
9 been wearing full face respirators when they
10 went in, but they were not because it wasn't
11 appropriately posted. But do we know, I don't
12 see anything here that says that we don't know
13 who went in the building. Did I miss
14 something?

15 **MR. POTTER (by Telephone):** Right. I don't
16 have any information to identify who may have
17 gone into the building. But remember, this is
18 a specific job on a specific day of rather
19 limited duration. So there wouldn't have been
20 a whole lot of people affected. I think
21 you're right in that these people may have to
22 self identify in order to take this into
23 account. But looking at a person's typical
24 career over several years, this is a job of
25 duration of hours and not, probably would not

1 be significant in the overall scheme of
2 things.

3 **MS. BEACH:** Brant is correct. There are
4 probably two issues. If it's not posted, then
5 the workers could inadvertently walk through
6 without realizing that it was an en masse
7 situation. Thank you.

8 **MR. POTTER (by Telephone):** The other thing
9 that I guess I should add was that that
10 statement that you read was directly out of
11 the documentation. And DOE must have seen an
12 issue with this because they did not force
13 Mound to do any additional follow up, at least
14 in the documentation that I've seen.

15 **DR. ULSH:** Gene, I think it might be
16 worthwhile for us to take a follow up action
17 to see if we can determine who might have been
18 going in that building on that job.

19 **MR. FAUST (by Telephone):** Hey, Gene, it's
20 Leo. Look at your Mound response to that
21 particular --

22 **MS. CHANG:** Yeah, excuse me. We're having
23 trouble hearing you. Could please get on your
24 mouthpiece?

25 **MR. FAUST (by Telephone):** This is Leo.

1 Gene, look at your Mound response to that
2 particular issue. It talks about five of
3 seven workers submitted routine bioassays and
4 the second worker was not notified until asked
5 to sign the acknowledgement form. It looks to
6 me like they all left bioassay samples.

7 **MR. POTTER (by Telephone):** Leo, this refers
8 to other workers who may have not been
9 involved in the job but entered the building
10 while the ventilation was shut down.

11 **DR. ULSH:** Gene, I think we should take a
12 follow up action to see if there's, if we can
13 find any information on who might have been
14 affected by that. I mean, the answer may be
15 no, but we ought to look and get back to the
16 working group on that.

17 **MR. POTTER (by Telephone):** Okay, we'll take
18 another look at that. I'm not very hopeful.
19 I didn't turn up anything with this initially,
20 but there may be something we haven't turned
21 over yet.

22 **MR. STEWART:** You possibly could look for
23 some area monitoring results as well. We
24 don't tend to use those to reconstruct dose,
25 but we can use ^.

1 **MS. BEACH:** Thank you, Gene, you can go
2 ahead and continue if you like.

3 **MR. POTTER (by Telephone):** The second part
4 of that fine, the bioassay program issues were
5 mainly delays and things which don't affect
6 dose reconstruction; however, there were, as a
7 part of this implementation of a new alpha
8 spec system, some of the MDAs and decision
9 levels were reported in error, and those were
10 supposedly corrected. And looking in the MESH
11 data you can see a number, there's a MESH
12 history table that goes with the bioassay
13 data, and you can see that there are a bunch
14 of changes.

15 However, I wasn't able to determine
16 all the people potentially affected. All I
17 can tell you is that I can see where at this
18 timeframe where MDAs and decision levels were
19 changed to eliminate the problem with double
20 subtraction background. So basically what the
21 issue was, was that the results were not being
22 compared to an appropriate MDA and there were
23 changes made. And so that data should be
24 available to NIOSH, the correct ones without
25 the double background subtraction.

1 The last enforcement action in 2001
2 with a fine of 137,500 comprises almost half
3 of the documentation in that reference ID of
4 over 2,000 pages. And there were a number of
5 different events there. I think one of their,
6 four of them that were specifically listed and
7 then there were two that DOE identified but
8 said they were not fining the site for,
9 including one which I think will probably
10 generate a lot of discussion, a discovery of
11 unanalyzed bioassay samples.

12 The first issue was Building 38
13 plutonium intake event. And this again was a
14 specific operation that occurred January 25th
15 of 2001 where there was a limited number of
16 workers involved, I think only two in this
17 case. And things went wrong and we know who
18 those, we can tell who those guys were. So
19 that shouldn't be an SEC issue.

20 The second one involved an issue where
21 the site shut down uranium processing,
22 bioassay sample processing I should say, for a
23 short period of time, and as a result when
24 they returned to processing they found out
25 that some of the samples due to a query

1 deficiency, the samples were not -- excuse me,
2 not the samples, but the reporting was not
3 done in a timely manner. So again, this is an
4 issue where it's a problem for an operation
5 radiation safety program, but as long as NIOSH
6 has the results available, it should not be an
7 SEC issue.

8 Then, the third item involved another
9 issue with bioassay on radiation work permits.
10 And as a result of an audit for this one they
11 found that the characterization data
12 identified additional radionuclides that were
13 not identified to be sampled in the bioassay
14 required by that RWP.

15 And just want to say that this is not
16 too unusual a situation. That in a lot of
17 cases you will sample for the dominant or
18 indicate a radionuclide, and then you might
19 have a number of different means of assigning
20 doses to the other one, should an intake occur
21 of an indicator radionuclide. That was the
22 issue there. They did do an extensive
23 analysis after this and tried to determine
24 whether this was a problem, could doses have
25 been missed and so forth and follow up.

1 Unreviewed safety question program
2 deficiencies is described there. Basically,
3 this is a safety program that does not affect
4 dose reconstruction. In other words they were
5 required to do audits and this sort of thing,
6 and they inadvertently dropped a requirement
7 from a manual. So it should have no SEC
8 implications.

9 And then this is the August 1st
10 discovery of 15 unanalyzed bioassay samples.
11 This is the one that DOE stated they were not
12 fining the site for but included it in the
13 documentation. And this is a kind of a long,
14 complicated scenario that involves an earlier
15 discovery that led to a collection of follow-
16 up samples.

17 Some of these samples were sent to
18 CEP, which I think we're all pretty familiar
19 with that story, and eventually all
20 invalidated. And more samples were collected
21 and ended up being sent to Quanterra as well
22 as Argonne National Laboratory East who had
23 been doing the samples up 'til a certain point
24 for Mound.

25 And as a result of this long scenario,

1 which I think you have in your documentation
2 there, follow ups were eventually collected in
3 all of them, but some samples were retained as
4 back ups. And then again in 2001 the site was
5 getting ready to dispose of some of these what
6 they thought were back up samples, and they
7 found 15 samples that apparently got mixed in
8 and were not, in fact, back up samples from
9 the earlier go rounds.

10 So at this time I'm unable to identify
11 who those, which employees belong to those 15
12 samples, but they were known to Mound at the
13 time and follow-up action should have been
14 taken. We're still trying to pursue which
15 workers may have been affected by those
16 samples.

17 I guess I kind of left out a
18 discussion, the fact that these are Actinium-
19 227 samples, and so we're still pursuing who
20 those individuals might have been and haven't
21 been able to determine from the MESH data and
22 other sources exactly who they were and to
23 verify that there were appropriate follow ups
24 or the doses could be bounded or Mound did
25 some sort of analysis to say that, well, this

1 person was not an actual worker on the 227
2 project but may have been a manager or
3 whatever.

4 So we're still pursuing that one.
5 Which kind of, I'm sorry, it's a pretty short
6 summary. I'm sure I've missed some important
7 stuff that you want to ask questions about.

8 **MR. ALVAREZ (by Telephone):** This is Bob
9 Alvarez. I'm sorry I missed part of your
10 presentation. I came in maybe in the last
11 five minutes or so, but as I understand the
12 situation this is a problem that went back as
13 early as 1990, prior to the start up of the R
14 Building D&D project. Is that right?

15 **MR. POTTER (by Telephone):** Right, yes. As
16 I mentioned, you may have missed this part,
17 there was an early, there had been a couple of
18 rounds of D&D. In the first one the samples
19 were analyzed by Argonne National Laboratory
20 apparently without any problems. The second
21 go around Argonne decided that they didn't
22 want to compete with commercial labs and had
23 other priorities, so that's when the site
24 sought other labs to do the samples.

25 **MR. ALVAREZ (by Telephone):** Now, as I

1 understand that in mid-1992 the Mound
2 dosimetry coordinator apprised management that
3 R building worker bioassays were unanalyzed
4 and that management continued to ignore this
5 information until late 1993. Is that a
6 correct assumption?

7 **MR. POTTER (by Telephone):** I don't have
8 enough information to determine what was in
9 the minds of the managers. All I can say is
10 that there were --

11 **MR. ALVAREZ (by Telephone):** Well, I mean,
12 whether or not internal management documents,
13 did you review internal management documents
14 to that effect? The reason I'm asking these
15 questions is it goes back to a pertinent
16 question is did you review the bargaining
17 units root cause analysis of this?

18 **MR. POTTER (by Telephone):** I reviewed all
19 of the documentation that was in this Price-
20 Anderson file. And with over 2,000 pages, I
21 would have to take some time to look at what
22 you're asking about. It would probably best
23 be done offline.

24 **MR. ALVAREZ (by Telephone):** Okay, well,
25 let's talk about this offline because there

1 are a bunch of details that I'm not clear
2 about that I'd like to better understand. But
3 I guess the bottom line question I have here
4 is how many workers have that we understand
5 where we may have missed their dose as a
6 result of this situation?

7 **MR. POTTER (by Telephone):** Well, the first
8 go around -- let me see if I've got this
9 handy. As a result of the samples discovered
10 earlier, in 1990 or -- I'm not looking right
11 at the scenario or the timeline that I
12 produced at the moment here. I seem to have
13 it buried. In any case there were only in the
14 neighborhood of 40 or 50 employees that were
15 directly affected. And as a result the
16 follow-up samples ended up being collected for
17 close to 300 employees.

18 So it basically was thrown open to the
19 whole site if you felt like you may have been
20 exposed. And those samples were, in fact, I
21 think they collected two samples from each
22 individual. And those samples comprised the
23 back ups that were later discovered and the
24 scenario was that they thought that all of
25 these samples were back ups, but it turned out

1 15 of them were not apparently back ups that
2 were collected as a part of the follow up from
3 the earlier events.

4 **MR. ALVAREZ (by Telephone):** So there were
5 issues such as deficient MDA values for
6 various radionuclides being used in MESH to
7 flag positive results had not been updated
8 since 1992. Is this something that has been
9 corrected?

10 **MR. POTTER (by Telephone):** Right, yes, I
11 covered that earlier. That was a part of the
12 Price-Anderson findings and those were
13 corrected in MESH. I can see in MESH where
14 the MDA values were changed in the history
15 table that they have.

16 The thing that I can't determine yet,
17 but we've now got a MESH site, access to a
18 MESH site expert who may be able to help in
19 this regard. I can't tell who was supposed to
20 have MDA values changed. I can only tell you
21 that there are numerous examples where the
22 MDAs were changed because there's a history
23 table in MESH that tells you what the MDA was
24 when it was inserted and then when the record
25 was modified.

1 **MR. ALVAREZ (by Telephone):** Thank you.

2 **MS. BEACH:** Any other questions from the
3 work group?

4 (no response)

5 **MS. DeMERS:** For the 108 individuals who did
6 not submit bioassay samples for the 20 RWPs,
7 do you know what radionuclides were listed on
8 those 20 RWPs?

9 **MR. POTTER (by Telephone):** Yes, we can
10 determine --

11 **MS. HOMOKI-TITUS:** I'm sorry to interrupt.
12 I've had the operator disconnect the line
13 that's got us on hold and beeping.

14 **OPERATOR (by Telephone):** It will take me a
15 moment to locate this to know which line it
16 is.

17 **MS. CHANG:** Thank you.

18 **OPERATOR (by Telephone):** You're welcome.

19 **MR. POTTER (by Telephone):** In any case, I
20 think we do know which radionuclides are
21 involved in those.

22 **MS. DeMERS:** Do you know off the top of your
23 head?

24 (no response)

25 **DR. ULSH:** Gene, are you still there?

1 thorium, actinium, radium and radon and so on.
2 So they're all different.

3 **MS. DeMERS:** Are the RWPs actually in the
4 2,000-page document?

5 **MR. POTTER (by Telephone):** The RWP numbers
6 are, yes.

7 **MS. DeMERS:** Well, I meant the RWPs
8 themselves.

9 **MR. POTTER (by Telephone):** No.

10 **MS. DeMERS:** Do you have those available?

11 **MR. POTTER (by Telephone):** They're in MESH,
12 and the sign-in rosters are in MESH.

13 **MS. DeMERS:** Okay.

14 **MR. POTTER (by Telephone):** So for instance,
15 SW-0-0-8-97 is one I looked at in detail. The
16 workers signing in on that should have
17 plutonium, tritium and uranium. And I found
18 three workers had signed in, and I have the
19 dates for, I have their last entry dates, and
20 I have their bioassay dates for those
21 radionuclides. So for each one of these it
22 could be from one to hundreds of people
23 signing in so that's why it gets to be a
24 little complex to verify all this. So I did
25 it for a couple of them.

1 **MS. DeMERS:** Do you know which tables in
2 MESH this information is in?

3 **MR. POTTER (by Telephone):** Yes. Let me
4 see. I think I've got a version here. The
5 RWP tables all start with RWP underscore
6 something. So there's a table RWP Master, and
7 there's a table RWP underscore PER, underscore
8 Roster, underscore Data. And there's a table
9 RWP underscore Rad, R-A-D, underscore P-R-O-T,
10 underscore R-E-Q. And I think I pulled all of
11 that information from those three.

12 **DR. ULSH:** Can we, do you want us to e-mail
13 it to you?

14 **MS. DeMERS:** Yes.

15 **DR. ULSH:** Gene, can you e-mail what you
16 just said, the names of those tables, can you
17 e-mail that to Kathy and Joe?

18 **MR. POTTER (by Telephone):** Okay. If I
19 don't have all their addresses, I'll send a
20 copy to you as well.

21 **DR. ULSH:** Okay.

22 **MR. CLAWSON:** These 32 employees that,
23 individuals that were subsequently removed
24 from the list, this says that the RWPs didn't
25 need -- let's see, the signed in did not

1 require bioassay samples based on workplace
2 indicated for the job.

3 **DR. ULSH:** Brad, are you talking about
4 reducing the 108 number down to 76?

5 **MR. CLAWSON:** Yeah, the 32 individuals, but
6 they were still on RWP so they must have been
7 around something.

8 **MR. POTTER (by Telephone):** I kind of took
9 that at face value that the site had somehow
10 determined that bioassay was not required.

11 **DR. ULSH:** Did DOE accept that, Gene?

12 **MR. POTTER (by Telephone):** This is all, in
13 general, all documentation that went back and
14 forth between Mound and DOE. So I saw nothing
15 where DOE objected to that analysis. It's not
16 to say it doesn't exist, but it wasn't in the
17 2,000-plus pages.

18 **MR. CLAWSON:** Part of my thing that I've got
19 into is, number one, I don't know how come
20 those 32 people if they're on an RWP, they
21 would have been taken off because they're
22 still in there. Most RWPs, you're there for a
23 reason. It could be radiation only or
24 something else like that, but that's something
25 that we've kind of got.

1 But also, too, down at the bottom of
2 it you make a statement here that affected
3 workers should have provided bioassay follow
4 ups afterwards. Do we have anything proving
5 that they did or didn't?

6 **MR. POTTER (by Telephone):** Okay, that's the
7 -- I was just talking to Kathy about there,
8 that one can go through these and determine
9 from those tables what radionuclides they
10 should have been bioassayed for, when their
11 last entry date was and when their next
12 bioassay sample for that radionuclide was.
13 That can be done.

14 **MR. CLAWSON:** But we haven't done it as yet?

15 **MR. POTTER (by Telephone):** Well, like I
16 say, it becomes a little onerous, but I've
17 done it for like the first three or so.
18 Because you could have hundreds of entries on
19 some of these.

20 **DR. ULSH:** Just to clarify, Gene, the first
21 three -- you're talking about the first three
22 RWPs out of the 20?

23 **MR. POTTER (by Telephone):** Right, right, or
24 16 or whatever the reduced, the list of all
25 20, the original list that we don't have. So

1 that would be kind of hard to reproduce I
2 think. What we have is the ones that Mound
3 determined were the actual numbers after some
4 sort of analysis that they did. So I've got -
5 - let me look at that again how many I have,
6 RWP numbers.

7 I'm looking at a little bit longer
8 document than you folks have. Oh, I have, I
9 actually have 19 RWP numbers that are in the
10 documentation, the Price-Anderson
11 documentation covering the SW Building, 38
12 Building, WD, T and 88 Buildings.

13 **MR. CLAWSON:** So you've got 19 out of 20 of
14 them?

15 **MR. POTTER (by Telephone):** Yes, sir.
16 Somehow I was thinking it was 16, but, no,
17 there are 20 specifically listed in that
18 Price-Anderson documentation.

19 **MR. CHEW:** You said in your page three it
20 was 19, Gene.

21 **MR. POTTER (by Telephone):** And I was right.

22 **MS. DeMERS:** This is Kathy DeMers. Can you
23 clarify something for me? Did you look at the
24 roster of three RWPs and then compare them
25 back for 19?

1 **MR. POTTER (by Telephone):** Say that again,
2 please?

3 **MS. DeMERS:** Did you follow up and make sure
4 that the individuals who signed in on three
5 RWPs or 19 RWPs, did you follow up and make
6 sure that they had a post-job sample? I
7 wasn't sure whether it was three RWPs or 19.

8 **MR. POTTER (by Telephone):** Yeah, I said I
9 only went through -- let me just double check.
10 One, two -- I did SW-0-0-8-97, SW-0-1-0-97.
11 And that was a long one. That had many people
12 signing in. Okay, my apologies, it looks like
13 I did all of SW-10-97, which is a long one and
14 had many people signing in, but I only did the
15 first two, not the first three.

16 **MS. DeMERS:** Okay, thanks.

17 **MR. POTTER (by Telephone):** And see, for
18 each of these you have multiple radionuclides.
19 In general, SW-10 was a tritium only one, so
20 it was not too difficult to do. But say, this
21 had over a hundred different people sign in
22 and say that would have been one with three
23 radionuclides on it, it gets to be rather
24 onerous to follow all these up, but it could
25 be done.

1 **MR. CLAWSON:** Maybe we ought to remind.

2 **MS. BEACH:** I was going to before the next
3 discussion but now is fine too.

4 **MS. CHANG:** Just a reminder to please do not
5 put us on hold. Please use mute unless you're
6 speaking. And then when you're finished
7 speaking, please mute yourself again. You
8 could also use star six if you don't have the
9 mute button.

10 And this message is specifically for
11 the person who has put us on hold multiple
12 times today, and then you come back and you
13 found that you've been cut off the line, and
14 that is because your phone beeps, beep, beep,
15 beep, and so we cut you off. So please,
16 please, do not put us on hold.

17 And we were interrupting the
18 conversation to do this now because obviously
19 we can't tell you that when you're on hold.
20 So hopefully, you're hearing this now. Thank
21 you.

22 **MR. FITZGERALD (by Telephone):** Gene, Joe.
23 Some questions were raised, I guess, in that
24 timeframe about the usability of the post-job
25 bioassay samplings. I don't know if you

1 touched on that. Things like played out,
2 things like maybe short half-life materials
3 that were included. Anything that could not
4 be adjusted for in your view?

5 **MR. POTTER (by Telephone):** The only
6 discussion that comes to light when you
7 mention those type of issues is the 15 samples
8 that were discovered in August of 2000. They
9 were thought to be backups, but in fact, they
10 were not backups. They should have been
11 analyzed. Those samples were so old by that
12 time that they were never, in fact, analyzed
13 to my knowledge.

14 And eventually, and because of legal
15 concerns, they were not disposed of either.
16 So they determined that technically if they
17 analyzed them, they wouldn't know how to
18 interpret the results because of the age
19 possible played out or something. And so they
20 were ultimately turned over to DOE
21 interestingly enough. Now, I'm not sure what
22 DOE ever did with them. But that's the only
23 issue that I'm aware of where something like
24 that came up in the Price-Anderson
25 documentation. I'm not a Mound expert.

1 **MR. CLAWSON:** Well, this kind of comes back
2 on page nine here where the radiation permits
3 and stuff like that is what I was talking to
4 earlier. And I think we kind of pushed it off
5 to that area. You know, what kind of protocol
6 do we have to make sure that, how did the site
7 make sure that we had, that we were analyzing
8 for what we were supposed to be analyzing in
9 this?

10 And I guess that's, you know, it kind
11 of comes up to this right now. What Quality
12 Assurance program did we have to make sure
13 that the samples and RWP match for what they
14 were needing. It says here that they went
15 into a lot of them, and they found some
16 shortcomings and so forth like that. But it
17 comes back to that question that I have.

18 **MR. POTTER (by Telephone):** Right again, I
19 mean, this was the exact issue in a couple of
20 these where people did not receive the
21 bioassay that they were supposed to. If
22 that's the issue that, of course, those were
23 issues were pointed up and they were dealt
24 with through follow-up bioassay or whatever
25 means they had at their disposal, like they

1 had looking at actual work records or
2 whatever. That's one thing. And so these
3 specific issues, which were problems, were
4 discovered and were dealt with.

5 The issue on QA with the laboratory,
6 again, you are correct that this was a problem
7 from time to time. You see the, at least one
8 example that is a good and a bad thing for the
9 uranium samples were exceeding their
10 turnaround times for reporting the results.
11 That was actually as a result of a QA being
12 implemented in the lab.

13 It turned out to be a bad resin which
14 had to be replaced for determining the uranium
15 analysis, which resulted in them missing their
16 deadlines. But at least they were trying to
17 do the right thing.

18 **MR. CLAWSON:** Do we know how many RWPs that
19 they actually had at this timeframe? And the
20 reason why I'm questioning this is because one
21 of the comments that came out in one of the
22 petitioners was that they were on an RWP,
23 basically, supposedly it was supposed to be
24 covering everything that they needed, but they
25 went to multiple buildings, and they were just

1 staying on this one RWP.

2 And they went into different areas
3 because what they were doing was, basically,
4 they were doing some testing, but it took
5 multiple areas that they delivered things and
6 so forth like that. I'm just wondering at the
7 accuracy of this RWP covering for all that
8 because to me it shows that these RWPs were
9 for a certain area.

10 **MR. POTTER (by Telephone):** Right, that
11 issue is actually I don't think is in my write
12 up anywhere, but it did come up. That was a
13 part of the corrective actions. You have --
14 for those of you who haven't worked in these
15 programs, you have what's known as a general
16 RWP, and then you have specific RWPs.

17 A general RWP is sometimes done for
18 very low hazard work and would be used for
19 visits, tours and that sort of thing. And so
20 it keeps it from being overly onerous on
21 keeping records. You have one RWP that would
22 cover a multiple of the things, but they're
23 all low hazard things.

24 And during some of these corrective
25 actions it was pointed out that, well, this is

1 an issue, and from now on we're not going to
2 have any general RWPs that require follow-up
3 bioassay. So this is going to be ultra-low
4 hazard work is the only thing that will be
5 covered by a general RWP.

6 If you're going to have any work where
7 a follow-up bioassay would be required, then
8 that will be done on a specific RWP, building
9 by building and job by job. So that exact
10 issue that you're talking about was discovered
11 to be a problem during these Price-Anderson
12 follow ups.

13 **MR. CLAWSON:** So they finally came to this
14 conclusion around 2000?

15 **MR. POTTER (by Telephone):** I hate to quote
16 a date without looking at the documentation.

17 **MR. CLAWSON:** Well, I understand that. I'm
18 just looking at your paperwork because that's
19 kind of what I'm seeing that this is where
20 they're doing this follow up and so forth like
21 this. I guess my point kind of gets to the
22 earlier one of how is this being taken care of
23 earlier in these years.

24 Because it's like one of the
25 petitioners were saying, I worked in X

1 Building. I was on this RWP. So that was
2 having me checked for certain radionuclides,
3 but also in the process I would travel to
4 other buildings, but I just stayed on the same
5 RWP.

6 And I'm just questioning to make sure
7 that if he was covered for all radionuclides
8 that he could, because he was going from
9 building to building, with some of these tests
10 and so forth that they were experimenting
11 with. Because --

12 **MR. POTTER (by Telephone):** The only other
13 additional information I might offer is that
14 at these sites you always have a workplace
15 indicator program above and beyond what
16 bioassay may be required routinely in this
17 case by RWP. In other words you sign in an
18 RWP, you get a bioassay regardless of whether
19 anything happens or not.

20 And you also have workplace indicators
21 so if there would have been high air samples,
22 positive nasal swabs and so forth, some sort
23 of upset condition even though you may have
24 been on a general RWP or whatever RWP you
25 would have been on. It is likely that they

1 would have been followed up on. So what
2 you're really talking about missing are very
3 low level, chronic events which are not likely
4 to result in much dose.

5 **MR. CLAWSON:** Well, I just, and you're
6 right. I know that we deal with general RWPs
7 and so forth like that, and unfortunately, in
8 ours we've had to go away from the generals
9 because different requirements for different
10 bioassays and stuff. And I just, to me it's
11 just kind of interesting to me that each one
12 of these facilities in looking at the MESH
13 database, they were looking for specific
14 isotopes.

15 And I was just wondering how they were
16 catching to make sure that those people that
17 kind of, they were on one RWP at one building,
18 but were going to the other ones being
19 covered. And I don't think we can really
20 capture that.

21 **MR. POTTER (by Telephone):** I accept that as
22 a valid comment.

23 **MS. BEACH:** Are there any other comments?

24 SC&A, do you plan on putting together
25 a white paper formally for this for NIOSH?

1 **MR. FITZGERALD (by Telephone):** I think what
2 we're going to have is a point-by-point
3 response. I think we have a couple of
4 observations off the top. I think just based
5 on the discussion we just had NIOSH obviously
6 needs to verify that the individuals, the
7 workers, on the RWP roster were sampled for
8 the nuclides that would have been in the RWPs.
9 I don't think there's any disagreement with
10 that.

11 And the after-the-fact bioassay
12 sampling with the exception of the 15 that
13 were discussed ought to be doable as long as
14 the DL is available to NIOSH, the decision
15 level. So we'll have a point-by-point
16 response as part of the overall, you know,
17 we'll have an overall set of responses to the
18 NIOSH piece, the NIOSH responses.

19 **MS. BEACH:** Thank you.

20 Kathy, did you have something?

21 **MS. DeMERS:** No.

22 **DR. ULSH:** Josie, I guess I would raise that
23 up to the working group. In terms of looking
24 at all, I mean, one option -- okay, it seems
25 to me we've got a couple of choices, and it's

1 just a matter of what the working group's
2 pleasure is. We've got, of the 19, I believe,
3 RWPs, Gene has looked at two of them. One
4 option would be to say that's enough. The
5 other option would be to say, no, we've got to
6 look at all 19, and then, of course, if
7 there's anything in the middle.

8 **MS. DeMERS:** What year were those two RWPs?

9 **DR. ULSH:** Gene, the two RWPs that you
10 looked at out of the 19, what years were
11 those? Do you know?

12 **MR. POTTER (by Telephone):** I can check
13 quickly here. Specifically, they were the
14 ones listed in the Price-Anderson
15 documentation were both, the ones that I
16 looked at were both '97. The only other years
17 affected by any of these are 1996. There are
18 two plutonium anomalies from 1996 for 38
19 Building.

20 **MS. DeMERS:** And they were all from '96 and
21 '97?

22 **MS. BEACH:** Didn't you say they were from
23 '97 but the only other year affected was '96?

24 **MR. POTTER (by Telephone):** Yes, ma'am.

25 **MS. DeMERS:** So all of those RWPs should be

1 in the MESH database.

2 **DR. ULSH:** Yes. So keep in mind that there
3 are potentially hundreds of people
4 potentially, I don't know, ten multiple
5 radionuclides each. Is there some way a
6 sampling strategy short of looking at every
7 person, every radionuclide or is that what you
8 want to see. I guess that's the question I
9 would throw on the table.

10 **MR. FITZGERALD (by Telephone):** Just going
11 back how did you choose the two that you
12 chose, Gene?

13 **MR. POTTER (by Telephone):** They were the
14 first two on the list.

15 **MR. FITZGERALD (by Telephone):** Okay, so
16 just random more or less.

17 **MR. POTTER (by Telephone):** I might mention
18 that, for example, RWP 38-0-3-4-97 there are,
19 I don't know how many people signed in on it,
20 but it is for it looks like three, six, nine
21 radionuclides. So potentially that's a query
22 for all of those for each person signing in.

23 **MS. BEACH:** Can you give me that RWP number
24 again, please?

25 **MR. POTTER (by Telephone):** 38-0-3-4-97.

1 **MR. FITZGERALD (by Telephone):** I guess Brad
2 raises a good question.

3 Josie, why don't we, I mean, this is
4 one possibility, take it as an action and come
5 back with a proposal on a sampling regime. It
6 sounds like the balance would be an onerous
7 task if, in fact, there's a lot of data
8 points. But since we haven't actually
9 reviewed one yet, perhaps we should do that
10 first and then get back to the working group
11 and NIOSH as to how we would propose to take a
12 look at those.

13 **MS. BEACH:** That sounds like a great
14 suggestion.

15 **MR. FITZGERALD (by Telephone):** I don't
16 know. It may mean that we would have to
17 propose a sampling regime that would be
18 something less than the 17 that are left.

19 **MS. BEACH:** That sounds good to me. How
20 about the other members of the working group?

21 **MR. CLAWSON:** That sounds fine.

22 **MS. BEACH:** I'm hearing yeses, Joe, so --

23 **MR. FITZGERALD (by Telephone):** And I
24 understand, and I guess Kathy has confirmed
25 this, everything we need to tap into is in

1 MESH, and we will have the file name. So I
2 guess we're able to do that rather readily.

3 **DR. ULSH:** All right, we have an action item
4 to send you the --

5 **MR. FITZGERALD (by Telephone):** Yeah, we'll
6 get on that and the first thing is to get back
7 with a strategy, a sampling regime, and then
8 go from there.

9 **MS. BEACH:** And you also have the action
10 item to the workers, the one early on, the
11 question that I had. How many workers may
12 have been in the buildings and the en masse.

13 **DR. ULSH:** Yes, we will look to see if
14 there's any additional information. There may
15 not be, but we'll at least take another look
16 and let you know.

17 **MS. BEACH:** How are we doing? Does anybody
18 need a break or are we good to go?

19 **MR. CLAWSON:** Ray, you're the important one.

20 **MS. BEACH:** I do think at this time we need
21 to look at our agenda because I'm feeling like
22 we were a little overambitious, and we're
23 definitely not going to get all these items.
24 So I am going to ask for comments on which
25 ones we feel are most important today, and

1 which ones we're going to have to come back
2 to. So we do have roadmap to bioassay data.
3 We have the Mound matrix items.

4 **DR. ULSH:** The one that we've made the most
5 progress on, at least I could give you a brief
6 overview on it, is probably the roadmap.

7 **MS. BEACH:** Okay.

8 **MR. FITZGERALD (by Telephone):** Yeah, I
9 would suggest that if we don't reach the last
10 item, we're going to try to come up with a
11 sort of a status summary of where we stand on
12 each of the issues in terms of the responses
13 we received this past week. And certainly, we
14 can have that dialogue back and forth and make
15 you aware and make Brant and NIOSH aware of
16 where we think that issue stands, and how we
17 intend to move forward to resolve it. So if
18 nothing else, we'll try to get that in the
19 mail in the next couple of weeks.

20 **MS. BEACH:** Okay, that sounds great. So we
21 will move on to roadmap to bioassay. So we
22 are going to take a five-minute comfort break
23 at this time. We will resume at 2:20.

24 (Whereupon, a break was taken between 2:14
25 p.m. and 2:20 p.m.)

1 **MS. BEACH:** Okay, we are back on line.

2 **MS. CHANG:** We would like to remind people
3 one more time to please use the mute button or
4 star six, and please do not put us on hold.
5 If you need to, hang up and dial back in.
6 Thank you very much. And this message is for
7 the one person in case you missed our previous
8 announcement that's been putting us on hold
9 today, and we've had to disconnect them
10 because it's been very disrupting. Thank you.

11 **MS. BEACH:** Thank you.

12 Brant, I'm going to let you start on
13 this.

14 **ROADMAP TO BIOASSAY DATA**

15 **DR. ULSH:** I think it's matrix issue one I'm
16 going to talk about. I'm more affectionately
17 calling it the roadmap. At the last working
18 group meeting it was requested that NIOSH put
19 together, well, for lack of a better word, a
20 roadmap that kind of lays out the major
21 processes, programs that occurred at Mound.
22 What radionuclides were involved with those
23 programs, and then pair that to the bioassay
24 that might have been used to detect those
25 radionuclides.

1 So Mel Chew is here in the room. Mel
2 and Don and other members of the ORAU team put
3 together this document. It was sent out a
4 little more than a week ago. It's a rather
5 massive document. They did quite a lot of
6 things at Mound over the course of its
7 history. I think we are up to 85 pages at the
8 moment and complete with color coding. So
9 with that I'm going to turn it over to Mel to
10 describe some of the general features of the
11 roadmap. Due to time limitations, we're going
12 to try to keep this fairly brief.

13 **MR. CHEW:** Well, thank you very much. We're
14 not going to go down line by line. Let's talk
15 about what's the purpose of the roadmap. And
16 as Brant so correctly said, Mound was a very
17 complicated facility, did a lot of research
18 and development throughout the whole history
19 of it, and many different exotic isotopes and
20 so I'm going to let Don talk about that a
21 little bit more. But we'll try to combine to
22 give you information of what program and
23 processes took place, what timeframe took
24 place, what radionuclides were talked about.

25 And you can see just on looking at the

1 first page, some of the quantities of the
2 materials, those are still left fairly open in
3 general terms. The majority of the quantity
4 of materials are still, because of the R and D
5 nature, are still classified information.
6 There's a, one of the primary sources of this
7 particular roadmap was the King document.

8 I think we have all talked about that
9 one, which gives a lot of background
10 information on that. Basically, left out the
11 quantities of materials because of
12 classification. However, we understand there
13 is an appendix to the King document which the
14 Albuquerque Operations office right now is
15 trying to put their hands on it, and we'll
16 have a chance to look at that.

17 When we do fill in the quantities,
18 because of the classification nature here, and
19 this follow-up document will have taken a
20 little different form. The materials and the
21 characteristics --

22 **UNIDENTIFIED SPEAKER (by Telephone):** Could
23 you speak up a little bit, please?

24 **MR. CHEW:** You can't hear me. Is that you,
25 Mike? I'm right next to the microphone. Can

1 you hear me okay, now?

2 **UNIDENTIFIED SPEAKER (by Telephone):** Yeah,
3 that's better.

4 **MR. CHEW:** I just finished talking about we
5 have a column of not only the radionuclides
6 but the quantity of radionuclides associated
7 with each different process. You also can see
8 which locations within the particular facility
9 as clearly as well as we can define to talk
10 about what processes took place and what
11 quantity took place and what the material
12 characteristics was of that particular
13 material here. As I said we're not going to
14 go down, but there's lots of information here.

15 I just want to assure that we did not
16 infringe on any classification issue. Some of
17 the detail process information has been taken
18 out of this particular document because we did
19 not feel that it had anything to add to the
20 dose reconstruction, but that information is
21 available.

22 I think the key is that what is the
23 bioassay method so you can track along which
24 of the different program process radionuclides
25 that we would be using as far as the dose

1 reconstruction side over here. And with that
2 I'm going to let Don talk about that because
3 he was the primary person that assigned the
4 bioassay method for each of the radionuclides
5 as it related to the particular program.

6 **MR. STEWART:** Yeah, as Mel pointed out, and
7 Brant, there were a number of different
8 processes implemented at Mound. And what we
9 typically we see small-scale research
10 operation that was followed by a limited
11 production experimentation. And in some cases
12 that was taken to a semi-works or a full
13 refinery methodology.

14 We saw that several times in the
15 course of the Mound history working with
16 different source terms, different feed
17 material, and in some cases different bioassay
18 methods. So a campaign would come along.
19 They would pursue the research, go through
20 whatever processes they were going to do, and
21 then they would finish it up. So there were
22 discrete periods where you were exposed to one
23 thing and not another.

24 Typically, and we go back to Meyer on
25 this, they would perform bioassay for that

1 campaign from start to finish. There were
2 holes, including as we pointed out previously,
3 in the radium-actinium program when we really
4 didn't have a bioassay method for the first
5 couple of years or so. A lot of the bioassay
6 that we've paired with this is in the form of
7 gross alpha analysis.

8 We see that we had a very large number
9 of these bioassay methods. That is typically
10 good for actinides. In fact, it's stated in
11 the literature that they did all actinides
12 with the gross alpha process. That wasn't
13 always the case, but a lot of the
14 radionuclides are captured in that.

15 When you get to a presumptive
16 exposure, typically what we're faced with in
17 the dose reconstruction process there's very
18 little case-specific data. What we might have
19 is a set of bioassay results and not a lot of
20 information as to what the individual did.

21 In some cases the individual can't
22 recall the work he performed. In some cases
23 it's not the actual worker himself, and the
24 interviewee had little information about what
25 they did. So the dose reconstructor is

1 typically assuming what the exposure would be
2 based on job title or whatever other
3 information is available. But the presumptive
4 exposure typically at Mound is Pu-238. That
5 is probably what most people were exposed to,
6 not in all cases. When we know more, we do a
7 more detailed dose reconstruction.

8 And just the way this came about, a
9 little bit of background here, I wanted to
10 identify each of these major processes that
11 sort of ebbed and flowed and then come up with
12 a bioassay method for each one. Subsequently,
13 we had support to go and make this more
14 detailed, and the King document was sort of
15 added in line by line, and the matrix was
16 expanded to include locations as well.

17 With that I'll turn it back over to
18 Mel.

19 **MR. CHEW:** I think a couple of key points,
20 this is before I forget to mention, you notice
21 there were some tritium, the word tritium
22 compound shows up here. We deliberately did
23 not go into any definitions of what kinds of
24 compounds ^ in this particular document, and
25 we're just going to leave it that way, too.

1 But there are some specific metal tritium
2 compounds that we are aware of, and so we do
3 have information on that. When we have a
4 discussion later on about the tritides, we
5 will probably talk about them.

6 I think, as I said, this is a document
7 in progress and working. I think we have
8 refined the program and the different
9 processes to a high degree. There is probably
10 a combination of documents that you can see
11 that you can add a little bit more to
12 different processes, but we've basically tried
13 to keep this thing down to a minimum of so
14 many pages here.

15 We actually eliminated many of the
16 detailed processes but discuss the process in
17 general. I think the key is that we need to
18 look from left to right to look at the
19 programs, materials and the bioassay method
20 that has been assigned for to look at the dose
21 reconstruction for these particular isotopes
22 of interest here.

23 As far as exposed individuals right
24 now, that was another addition to see if we
25 could find information. That's probably the

1 most difficult thing to do because the King
2 document and the reference documents didn't
3 number them. We hope to still continue to
4 look at more data, and either through
5 interviews or additional documents, that we
6 can at least bound or bracket the number of
7 exposed individuals.

8 I think this is going to be probably
9 the most important when we're going to be
10 faced with some unusual exotic, and we would
11 know that we would either try to find that
12 there were only a few people that worked on
13 it. And you also see a reference column here.

14 Brant, anything you want to add?

15 **DR. ULSH:** So I think the bottom line to
16 take away from this as Mel already mentioned
17 is that this is a work in progress, but we're
18 pretty far along the road here. And also,
19 when you have a nonspecific bioassay, whether
20 that be for a particular radionuclide like
21 uranium but not isotope-specific or whether
22 it's a gross alpha technique for any of the
23 actinides, we would do at Mound the same thing
24 that we do at any other site.

25 And that is, based on the specifics of

1 the case, we would assign the most claimant
2 favorable of the possible radionuclides that
3 an individual was exposed to. So that's not
4 going to be any different here at Mound.

5 And I think with that I'll just open
6 it up for questions from whomever.

7 **MR. CLAWSON:** One of the earlier questions,
8 and I understand from you that this is gross
9 alpha. Is that what they were using for this?
10 You're using a gross alpha for bioassay? The
11 reason I'm wondering because earlier in the
12 day there was discussion of gross alpha versus
13 one of the other ones, and I never got an
14 exact answer if that's the process that we
15 were using to monitor.

16 **DR. ULSH:** You could use gross alpha for any
17 of the alpha emitters. Obviously, you
18 wouldn't use it for something like cesium or
19 tritium or strontium or anything. But if it's
20 an alpha emitter, you could do a gross alpha
21 urinalysis for it. Does that answer you?

22 **MR. CLAWSON:** Yeah, but I just didn't
23 understand because the two people who were on
24 before were saying somewhat, no, we're not
25 using gross alpha. Well, I think you brought

1 that up earlier. The process of gross alpha
2 or --

3 **MS. DeMERS:** I guess what Brad's probably
4 trying to say is that Liz was saying that on
5 the phone that the radiochemistry ^ the
6 plutonium and she kind of insinuated that it
7 wouldn't point up the other actinides?

8 **UNIDENTIFIED SPEAKER (by Telephone):** Would
9 you repeat that please and ask the person to
10 step to the microphone?

11 **MS. BEACH:** Thank you.

12 **MS. DeMERS:** Earlier today we were talking
13 about the high-fired plutonium, and Liz made a
14 comment that the radiochemical procedure for
15 plutonium would separate out the plutonium
16 specifically kind of indicating that it
17 probably wasn't selecting the other actinides.

18 **DR. ULSH:** Okay, well, let's consider what
19 would happen in a situation like that. If a
20 person was exposed to, I don't know, any
21 mixture of things -- okay, if our concern is
22 high-fired Plutonium-238 or not high fired,
23 and you do a plutonium-specific bioassay, well
24 then you're going to get an accurate result.
25 In other words the activity that you see in

1 the sample will be specific for plutonium.

2 But let's say on the other hand you
3 didn't do plutonium-specific. You did a gross
4 alpha. Well, that could pull down plutonium.
5 It could pull down uranium, thorium. And
6 let's say that there was some of that in
7 there. What would happen? Well, we would
8 pull it all down, get a higher activity in the
9 sample, and we would assign that to the most
10 claimant favorable of the possible
11 radionuclides which is usually plutonium. It
12 depends, but usually plutonium.

13 So let's say some of the activity that
14 we assign to plutonium is, in fact, I don't
15 know, thorium. Well, it's claimant favorable
16 because we treat it as if it were plutonium.

17 **MS. DeMERS:** And you looked in detail at the
18 recoveries for the particular radiochemistry
19 for the other radionuclides? Because I'm
20 assuming they used a recovery ^ plutonium.

21 **UNIDENTIFIED SPEAKER (by Telephone):** Would
22 you come to the microphone, please?

23 **MS. DeMERS:** I asked them if they looked at
24 the recovery percentage for the other
25 radionuclides for the gross alpha technique in

1 addition to the recovery that they got for
2 plutonium.

3 **DR. ULSH:** For that I would have to turn to
4 someone with more of a detailed knowledge of
5 internal dosimetry.

6 Is that you, Don, or do we have to
7 wait for Liz?

8 **MR. STEWART:** Yeah, I think Liz is somebody
9 that would talk about that. But just a point
10 on the earlier point. Tom said that he had
11 used 896 claims. And Liz said that there was
12 chemistry done on those. They had the option
13 to use solvent extraction to separate the
14 plutonium.

15 We're actually talking about 14,000 or
16 more results for gross alpha. So I think it's
17 certainly consistent with a smaller sample of
18 them being analyzed for plutonium ^ . So, no,
19 we haven't looked in detail at recovery
20 fraction.

21 **DR. ULSH:** Well, I know there was an issue
22 that you sometimes hear discussed about the
23 recovery fraction for polonium being ten
24 percent. I think there was some degree of
25 contention about that early on in Mound's

1 history or maybe even in the '90s, but that's
2 the only one specifically that I'm aware of
3 that I've seen discussed, Kathy. I'm not
4 saying that the recovery fractions on the
5 other radionuclides are not available. I just
6 don't have them.

7 **MR. STEWART:** The gross alpha is pretty
8 high. I don't have it off the top of my head.

9 **MS. BEACH:** Has this been posted onto the O
10 drive yet?

11 **DR. ULSH:** Oh, no, because it might be ^.

12 **MS. BEACH:** I understand.

13 **DR. ULSH:** We are going to submit this for
14 security review. If we get the blessing to
15 release it publicly, we will do that.

16 **MS. BEACH:** Also, when I was looking through
17 this on page three, I do not know if you can
18 answer this. It's probably pretty minor.
19 Second column, I believe it's gray on my copy,
20 under the helium-3 separation, at the bottom
21 of that it says, "released to the ERS in SW
22 Building," and I'm not familiar with the ERS
23 term. I was wondering --

24 **MR. STEWART:** Full recovery.

25 **MS BEACH:** Full recovery. Thank you.

1 **MR. FITZGERALD:** Mel, this is Joe. I just
2 have a quick question. You have a column
3 called Program Process but clearly you're much
4 broader than, I think you're identifying areas
5 of contamination as well.

6 **MR. CHEW:** Yes, Joe. Can you tell me what
7 you're trying to --

8 **MR. FITZGERALD:** Oh, no, no. I'm just
9 saying that one issue that we're more
10 sensitive to, given the NIOSH responses, I
11 think we're focused in some areas with
12 byproducts and contaminants of processes
13 different than actual processes themselves.

14 And I think your first column is
15 encompassing both. Is that what I'm seeing in
16 your first column there? I think there are
17 some areas where you discuss the presence of
18 contaminants at certain locations and
19 byproducts as well as actual process source
20 material.

21 **MR. CHEW:** That's correct, uh-huh. Yes.

22 **MR. SCHOFIELD:** I've got a question for you.
23 What about when you see a lot of the other
24 actinides in higher than normal concentrations
25 with the plutonium, whether it's americium,

1 thorium, whatever it is? It's in above normal
2 concentrations.

3 **MR. CHEW:** The quantity or --

4 **MR. SCHOFIELD:** Yeah, the quantity.

5 **DR. ULSH:** Well, how do we approach dose
6 reconstruction in that case? Is that your
7 question?

8 **MR. SCHOFIELD:** Yeah, I mean, if you're
9 using this gross alpha, how is that going to
10 affect their analysis?

11 **DR. ULSH:** Well, let's say that a person was
12 exposed to plutonium because that's the most
13 common at Mound, but also, I don't know, pick
14 one, americium maybe or uranium, any of those
15 three let's just say for the sake of
16 discussion.

17 What we would do depending on which
18 organ the cancer occurred in, we would -- we
19 have a gross alpha result. That tells us how
20 much activity is in the urine. We would look
21 at the organ dose if we considered it all
22 plutonium. We would look at the organ dose if
23 we considered it all americium or all uranium
24 and see which one is the most claimant
25 favorable among those plausible choices.

1 certainly the radon issue existed before the
2 venting in 1980.

3 So the presumption is following the
4 closure of the cave up through 1980 there
5 would have been particularly elevated levels,
6 and then there was the venting in 1980. We'll
7 get to that issue, obviously a separate issue,
8 but in terms of your chart, is that timeframe
9 not reflective of that?

10 **MR. CHEW:** I haven't caught up with you.

11 **MR. FITZGERALD:** The timeframe for the
12 elevated rate -- this is on page 42. Am I
13 reading this right? Elevated radon levels in
14 SW Building timeframe begins in 1981?

15 **MR. CHEW:** I think that the elevated levels
16 was stated in the, I think the reference we
17 used in that one was the Doug Draper interview
18 here. You see it, Joe?

19 **MR. FITZGERALD:** No, no, we interviewed
20 Doug, and I'm understanding where he was
21 coming from, but in terms of the, you know,
22 the historic scope of the issue it was pretty
23 clear to him as well as the Jenkins and others
24 that the elevated radon levels in SW pre-dated
25 that sampling that Jenkins did in 1980.

1 **MR. CHEW:** Yeah, that's probably true.

2 **MR. FITZGERALD:** So I'm just saying, so
3 there's a couple places in terms of
4 timeframes. I realize this is a work in
5 progress, just wanted to clarify that.

6 **MR. CHEW:** Sure, thank you, Joe.

7 **DR. ULSH:** Joe, you're absolutely right. I
8 know that they were worried about -- and Don
9 can fill in more on this -- you look at the
10 periodic health physics progress reports, they
11 were done quarterly I believe, at least for a
12 lot of the time periods. They were looking
13 specifically at short-lived daughter products
14 in air. So you're absolutely right. There
15 was concern about radon prior to '81. And
16 we'll take a look at that particular place in
17 the roadmap that you mentioned because I don't
18 think we want to say that radon was only an
19 issue from 1981 forward. I don't think that's
20 true.

21 **MR. FITZGERALD:** Again, this is a pretty
22 long document, and I think it's a very
23 comprehensive piece. I think there's a couple
24 places, you know, we'll certainly offer any
25 comments if we have any.

1 **MS. BEACH:** Mel, I want to go back to the
2 incident report. Can I find those incidents
3 on the table? Is there an indicator of how to
4 do that? I'm unable to see it.

5 **DR. ULSH:** Are you on page 84?

6 **MS. BEACH:** Yes.

7 **MR. CHEW:** Yeah, it's on 84. I'm just
8 trying to see how you can go to the ^.

9 **MS. BEACH:** I guess I just thought since you
10 put them in the back then there would a space
11 in your table to find them.

12 **MR. CHEW:** I should probably ^ information
13 or on the O drive we should put them in. I
14 think that's your comment.

15 **MR. STEWART:** Yeah, those are quoted in the
16 King document.

17 **MR. CHEW:** Right, let's put them in like
18 references. Would that --

19 **MS. BEACH:** Yeah, I would -- since they were
20 there, I thought, you know.

21 **DR. ULSH:** It makes sense. We can do that.

22 **MS. BEACH:** You should have more information
23 then, anyway, okay, thank you.

24 **DR. ULSH:** Well, we would, but you asked
25 earlier when we, if we were going to make this

1 publicly available. To get through security
2 this will all have to be --

3 **MS. BEACH:** Taken out.

4 **MR. CLAWSON:** Yeah, but see, couldn't we do
5 that as an attachment that we could have so we
6 can address that?

7 You know, and, Mel, like usual you've
8 done a tremendous job here. Everybody looks
9 great. But one of my questions is is -- and I
10 appreciate this the bioassay methods and stuff
11 like this -- when you're stating that they
12 were done by the process and that's what they
13 determined what the bioassay should be for is
14 the process that was going on --

15 **MR. CHEW:** It's probably more the
16 radionuclide associated with the process.

17 **MR. CLAWSON:** Right, and this is what came
18 up because this basically comes back to the
19 D&D era that we've seen at numerous other
20 sites of all this stuff has gone. And Mound
21 was a famous one for this. They would build
22 something, and then they'd go in and tear it
23 all out and bring in something new. Was there
24 any way that they were checking to make sure?

25 Because I think of one of the

1 instances pulling up there and ripping out one
2 of the processes and pulling it out and all of
3 a sudden there was no tritium and all of a
4 sudden there was. They had uncovered it
5 because it was underneath the metal and so
6 forth. And I was wondering was there, I just
7 want to make sure that people were monitored
8 for that.

9 And this was in the later years as
10 they were tearing it down in the D&D era and
11 stuff like that. They had numerous, it wasn't
12 there at the beginning, but now it is. And
13 they were determining it as they were pulling
14 up floors, equipment, cutting it up and
15 tearing it out that all of a sudden they were
16 releasing the history from a long time ago.

17 And I'm wondering if there was any,
18 you know, that's when we're getting the RWPs
19 because some of them mentioned that basically
20 they weren't on an RWP because they didn't
21 need to be because it would have been clean.
22 But when they ripped the building, were
23 ripping the building apart, all of a sudden
24 they unearthed a lot of these things. I'm
25 just wondering how we --

1 **MR. CHEW:** What you'll see in the process
2 side, and especially relating to a specific
3 facility which we try to mention in here,
4 those particular radioisotopes would have been
5 present during the operation. Your point is
6 correct. Sometimes they said, oh, gee, we
7 cleaned it up, and later on found all that
8 activity.

9 And so I'm not personally aware of any
10 -- but we can certainly look -- of any
11 document that was just focused in on the D&D
12 portion of it to say when we did D&D, these
13 are the radioisotopes we encountered or we
14 have found in the operation here.

15 Don, maybe you could help me. Have
16 you seen a document like that?

17 **MR. STEWART:** I don't know that there's a
18 single repository for that. It's certainly
19 something to look at. I mean, if they had
20 just simply assumed a production source for
21 Actinium-227, for example, it never would have
22 been on the RWP-97 for a 21 year half-life. I
23 mean, it was essentially gone by the time they
24 started to do this D&D.

25 So certainly, part of the RWP

1 formulation process still considered what was
2 in there. And the King document that we keep
3 talking about is certainly a fund of
4 information here because it records what was
5 done in each room throughout the history of
6 the Mound site. So it's clear that that
7 knowledge was there. And certainly, if you're
8 going to write an RWP for a given area, you've
9 got to consult the history of that area.

10 **MR. CLAWSON:** I know that we've fallen into
11 some lacks of that in my area of knowledge.
12 And to tell you the truth I wish we had some
13 of this for some of our buildings. Because
14 they're coming up with some --

15 **MR. CHEW:** That's ^.

16 **MR. CLAWSON:** -- actually quite good. I'm
17 quite enjoying it. But I know in some of the
18 interviews and so forth like that, they were
19 talking about that era and how it was here; it
20 wasn't here, and now it was and so forth like
21 that. One of the questions was we don't even
22 know if they were monitored for that.

23 **DR. ULSH:** Brad, I've heard similar stories,
24 too, in the workers that I've talked to. It
25 seems that toward the D&D era they lost a lot

1 of institutional knowledge of what went on
2 where.

3 **MR. CLAWSON:** Right.

4 **DR. ULSH:** And so that's a concern that I
5 hear frequently expressed, too.

6 The other part of this in terms of
7 when you add radionuclides to an RWP, sure,
8 you're going to consult the process knowledge
9 that you have. But the second part of it,
10 assuming it's done correctly, would be to do
11 pre-job characterization. If you want to do
12 swipe sampling, maybe core sampling, and see
13 what kind of radionuclides you encounter.

14 Now, of course, you know this better
15 than I do, sometimes even that is going to
16 leave you with a couple of surprises. You get
17 into a job. You're doing something. The cams
18 go off, and it shouldn't. Well, what you
19 would hope that they would do would be to go
20 in and take follow-up bioassay samples and
21 find out what it was. Now, there's a question
22 about whether they reliably did that, but
23 that's what you would hope they did.

24 **MR. CHEW:** Since this is a document working
25 in progress, we'll continue. What I think I'd

1 like to do is to go look at several of the
2 RWPs used for D&D and see what's in there.
3 And then see if it tracks with what we have
4 here.

5 **MR. CLAWSON:** This is what I was going to
6 ask you to do.

7 **MR. CHEW:** We can do that.

8 **MR. CLAWSON:** Well, I can't assign you to
9 do, but as a working group member, this is one
10 of the things that I've heard numerous times
11 and so forth like that. And a lot of these
12 processes -- and one of the things that I
13 heard so often was, and Mound was especially
14 for this, they would leave a room dormant for
15 years. They'd come back. They'd decon it all
16 down. They'd tear out some stuff. They'd
17 bring something else new in there and do
18 another process.

19 That is not uncommon. We do that at
20 Idaho. We do it at a lot of different places.
21 But then when we fell into the D&D era, we
22 were bringing up stuff from 20-to-30 years ago
23 that all of a sudden that was not there.
24 Because especially breaking out the concrete,
25 bringing up anchor bolts and so forth like

1 that all of a sudden it came.

2 I just wanted to make sure that,
3 especially from the petitioners' part, that
4 the RWPs covered what we potentially could
5 have got into. Because in the later years I
6 understood that it was a somewhat of an
7 institutional loss and so forth like that.
8 That there wasn't too much follow up, and I
9 just want to make sure we kind of look at that
10 as we're looking into this.

11 **DR. ULSH:** I think we're fortunate in that
12 SC&A's going to be taking a look at the RWPs
13 related to the Price-Anderson Act. This is
14 during the D&D era. One thing that we could
15 look at is like Mel said, we could look at the
16 radionuclides that were on RWPs and track it
17 back to here and see if --

18 **MS. BEACH:** But my question is how many RWPs
19 would you do? Would you pick and --

20 **MR. CHEW:** I don't even know how many were
21 done for the D&D, but I would imagine there
22 would be some.

23 **MS. BEACH:** So you'll look specifically at
24 the D&D --

25 **MR. CHEW:** Well, I think that's the best way

1 to do --

2 **MR. CLAWSON:** Yeah, because we get back to
3 the general RWPs and specific RWPs. I think
4 you'll come to find out there weren't that
5 many RWPs for the D&D era. My understanding
6 is that we were looking at basically maybe
7 four or five. It was kind of building
8 significant. I just want to make sure we
9 follow up on those.

10 **MR. PRESLEY:** This is Bob Presley. That's
11 what I'd like, to do it by area.

12 **MR. CHEW:** Josie, I'd like to just make a
13 comment that as you folks see this particular
14 roadmap, there was a considerable amount of
15 work to put together. Several of the staff
16 worked with NIOSH and ORAU. I'd like to just
17 make sure I acknowledge them and people like
18 Sam and ^ and Leo Faust and Bryce and Bob
19 Morris. It took a lot, a whole team to put
20 this together.

21 One more comment, Mound is very unique
22 because they did a lot of R and D work and a
23 lot of different isotopes. And so a roadmap
24 like this makes a lot of very good sense. I
25 hope I'm not setting a precedent for all the

1 other sites.

2 **MS. BEACH:** Oh, yes, you are.

3 **MR. CHEW:** -- but that has already been
4 mentioned.

5 **MS. BEACH:** Since I wrote your name on the
6 document.

7 **MR. CLAWSON:** Does Idaho come to mind?

8 **MR. CHEW:** It is very good to be able to
9 take a look at one document and sort of see a
10 picture. It gives you a very good picture all
11 at one time.

12 Probably I'll say this to Joe, my good
13 friend Joe, it probably begs more questions
14 than answers, Joe, but we can certainly go
15 with that.

16 **MR. CLAWSON:** Well, I'd like to compliment
17 you on this because just in reading this it
18 gives us a better idea of actually what went
19 on. And I really commend you for it and so
20 forth like that.

21 **MR. CHEW:** Well, it was Brant's idea and
22 Don's, and we just picked it up and...

23 **MS. BEACH:** Okay, Joe, do you have anything
24 else?

25 **MR. FITZGERALD:** The only thing I would

1 offer is that this is a good tool for the work
2 group and for the dialogue we're having. So
3 as we go through and identify information that
4 would be relevant to this, we'll send it
5 through the work group to NIOSH so that it
6 might be considered as source material for
7 the, you know, as this thing, since it's a
8 living document so in terms of updating.

9 So we would, certainly, if we do find
10 anything that would be location-specific,
11 time-specific on certain nuclides, we'll pass
12 it on to, I guess, Mel through Brant and the
13 work group, and just keep, feed it along with
14 everybody else.

15 **MR. CHEW:** I think, Joe, on that note we are
16 aware of quite a bit of that, but we just
17 decided to keep this a little bit more
18 simplistic.

19 **MR. FITZGERALD:** Yeah, I mean, if we find
20 anything that's particularly noteworthy that
21 would be useful in a discussion on the issues
22 that we have, then we'll make that known as we
23 go.

24 **MS. BEACH:** And I believe Kathy has one more
25 question.

1 **MS. DeMERS:** Have you guys identified any
2 gross beta results?

3 **MR. STEWART:** No.

4 **MS. DeMERS:** Okay. Are you still looking
5 into how you're going to look for the beta-
6 gamma emitters?

7 **MR. STEWART:** Specifically, which beta-gamma
8 emitters are you talking about?

9 **MS. DeMERS:** There's several examples.

10 **MR. STEWART:** Which processes?

11 **MS. BEACH:** Are you talking about page
12 three?

13 **MR. CHEW:** I think she's talking more about
14 the, when some of the business plugs are being
15 processed ^ T-59 building, too.

16 **MS. DeMERS:** Yeah, there are several
17 examples here where there's --

18 **MR. CHEW:** ^

19 **MS. DeMERS:** And you've got gross alpha that
20 was used, and my question is, was there gross
21 ^?

22 **MR. GIBSON (by Telephone):** I'm having a
23 hard time hearing everyone talk.

24 **MS. BEACH:** Thanks for the reminder. If you
25 could please speak into the microphones.

1 Did you hear Kathy's question?

2 **MR. GIBSON (by Telephone):** I didn't hear
3 the question or the response.

4 **MS. DeMERS:** I asked if there was gross data
5 urinalysis to evaluate the beta-gamma emitters
6 at Mound.

7 **DR. ULSH:** And the reply was no gross beta.

8 **MR. STEWART:** Yeah, throughout history there
9 was no gross beta.

10 **DR. ULSH:** What about specific, more
11 specific like strontium or --

12 I think, Kathy, again, I would need to
13 look at the specific situation, but when you
14 see gross beta it could be -- sorry, gross
15 alpha -- it could be an indicator that we
16 would be looking for the indicator species,
17 the dominant radionuclide as opposed to the
18 very minor beta contaminant.

19 **MR. STEWART:** Again, Kathy, a lot of these
20 in this third or fourth column over come
21 directly from the King document. And not that
22 it's always one hundred percent accurate, but
23 King definitely says the primary radionuclide
24 was Pu-238 with other exposures to these
25 others here. So one thing that wasn't

1 considered in the former part of the TBD was
2 the proportionate dose from these minor
3 constituents of the source term. And as we
4 say throughout here, the primary exposure is
5 Pu-238 in most cases.

6 **MS. DeMERS:** Can you clarify that under your
7 bioassay method when you're going to assume
8 that beta doesn't make up a significant
9 portion of the dose?

10 **DR. ULSH:** We'll take a look.

11 **MR. CHEW:** And if it's process-specific,
12 Kathy, that would be a good point.

13 **MS. BEACH:** Any other comments?

14 **MR. CLAWSON:** I've got one question. In
15 coming through this and reading through the
16 documents and so forth like that, I keep
17 hearing the terminology of the hot cells at
18 Mound. I have not been able to find an actual
19 hot cell at Mound yet. The New Cave? What
20 about the Old Cave? Do we have any drawings
21 or anything of that?

22 **MS. BEACH:** And that's funny because in my
23 notes I asked for you to define what the hot
24 cell was, what type of material it was made up
25 of so I had that same question.

1 **MR. CLAWSON:** Because one of the things came
2 down to the ventilation systems and so forth.
3 I know that we had some earlier ones and then
4 the Mound interviews and so forth like that
5 the comment was, well, they called it a hot
6 cell or it was basically a room. Now, later
7 on they said when they built the new one, but
8 it's not what I consider a hot cell. And I
9 was just trying to get a mental picture of
10 what we were talking. Is there any kind of
11 drawings or anything that would show us any
12 kind of ventilation or how it was set up?

13 Because numerous times we hear
14 referring to the hot cell, so forth, and some
15 incidences and so forth like that. And I'm
16 just having a hard time picturing what it
17 actually looked like. Now, when we went to
18 the museum and so forth like that they were
19 going to try to locate some pictures and so
20 forth and some of the stuff. But I haven't
21 had the opportunity --

22 **MR. CHEW:** I'm familiar with many of the hot
23 cells ^. We also would call hot cells that
24 would be a shielded glovebox using a
25 manipulator, too. But I don't know that for a

1 fact.

2 **DR. ULSH:** The room that you talked about, I
3 have seen pictures, and it is several feet of
4 shielding or several inches of shielding with
5 the remote manipulators. So that is the
6 picture you had in your head of a hot cell?
7 That's what it is.

8 **MR. CLAWSON:** Mine are five-and-a-half foot
9 thick.

10 **MR. CHEW:** Yeah, I know, but these are
11 shielded gloveboxes possibly. I don't know
12 that for a fact.

13 **MR. CLAWSON:** Because I see the terminology
14 going back and forth like that, and what I was
15 looking at was, okay, how are we set up in the
16 ventilation because I know that we made a,
17 because they referred to caves back and forth,
18 but they also called the same thing was a hot
19 cell, and I was just trying to get a picture
20 of what we had because we had the radon issue
21 that came up and so forth. If we had any kind
22 of drawings of that, especially the
23 ventilation process because this was one of
24 the add-ons versus so forth. And then when we
25 had the crack and so forth like that. If we

1 have any kind of prints or anything that's
2 showing what that really was like because I
3 was trying to understand what they were
4 talking about like this. And when they did
5 talk about it I couldn't see how that could go
6 on like that and what I saw as a hot cell.

7 **DR. ULSH:** They had two cave facilities, the
8 Old Cave and that's where they did the radium-
9 actinium-thorium separations, very messy,
10 contamination spilled all over the place.
11 That's why we went SEC on that. They
12 decontaminated that in 1959, ending 1959. And
13 then they built the New Cave facility which
14 included a hot cell.

15 **MR. CLAWSON:** Now, is that a glovebox or --

16 **DR. ULSH:** No, I don't think so. This is a
17 big -- I don't know the dimensions, but it's a
18 long bay with remote manipulators and several
19 inches of shielding. I've got pictures that
20 were provided to me by the museum, but I can't
21 remember if it's the Old Cave or the New Cave,
22 but I'll take a look.

23 **MS. BEACH:** This says on page three of the
24 matrix, third paragraph, fourth paragraph,
25 that was one of my questions, too. That took

1 place in 1964; however, this operation in
2 contrast to the operations with similar
3 materials in the '50s, was performed inside
4 the hot cell in the New Cave. They completely
5 isolated the material from the outside
6 environment, but there was quite a bit of
7 bioassays that were not done and they were
8 depending upon the New Cave. And on this
9 page, and then again for 1-B you guys
10 reference the hot cell and that no bioassay
11 was done because of the hot cell. So those
12 are the things I was looking at also.

13 **DR. ULSH:** Well, I'm not necessarily saying
14 that there was no bioassay -- maybe I was. I
15 don't know. I would have to look
16 specifically, Josie, at the 1964 actinium
17 project. I know that I've talked to the guy
18 who was in charge of that, the project
19 manager, and he told me specifically that it
20 was done in the hot cell. He told me that it
21 was a successful operation. They opened up a
22 couple of capsules, maybe there was more than
23 one. The first one that they opened up they
24 had some contamination inside the hot cell,
25 but he said it never escaped the hot cell.

1 The second one, and maybe the third one if
2 there was a third one, they didn't have those
3 kinds of issues, but it was --

4 **MS. BEACH:** But from my work history, I
5 worked in gloveboxes for Pu at Dash Five at
6 Hanford, and we were still on a bioassay
7 program even though all our work was performed
8 inside a glovebox. So I don't know if it's
9 the glovebox, a hot cell.

10 **DR. ULSH:** No, I think it's a hot cell. I
11 can't tell you whether or not the people who
12 were involved in that '64 project did or did
13 not have bioassay.

14 **MS. BEACH:** On page four it says bioassay
15 not taken for Thorium-230 not because Mound
16 lacked the capability, but because there was
17 no perceived need. And what I got from that
18 was because they didn't perceive a need
19 because they were in the hot cell.

20 **DR. ULSH:** Okay.

21 **MS. BEACH:** Unless I'm reading that
22 incorrectly.

23 **DR. ULSH:** A little bit, I might have
24 written it incorrectly. Thorium-230 would not
25 be the radionuclide that you would sample for

1 Cotter concentrate. It was several thousand
2 dpm of uranium, and you would use that as the
3 indicator species. So you wouldn't need to
4 sample for Thorium-230.

5 **MS. BEACH:** That's all a part of that
6 question, and the way it's in that paragraph I
7 tend to believe that that's why --

8 **DR. ULSH:** I could see where you could get
9 that impression. I should probably reword
10 that.

11 **MR. CHEW:** Brant, if you look at your page
12 24 in the roadmap ^ in the 1940-1953
13 timeframe.

14 **MR. FITZGERALD:** Brant, is that interview
15 with the project director, is that available
16 anywhere?

17 **DR. ULSH:** Yes, I believe it is. I believe
18 that it's in the SRDB, but I would have to
19 give you the number, Joe.

20 **MR. FITZGERALD:** Okay, fine.

21 **MS. BEACH:** And who is that project
22 director? Do you know?

23 **DR. ULSH:** Yeah, I know. We just can't say
24 the --

25 **MS. BEACH:** Oh, you just can't say. Thank

1 you, sorry.

2 **DR. ULSH:** I'll tell you offline, but, boy,
3 good test.

4 **MS. BEACH:** So, Joe, on this one I'm getting
5 you will be sending your questions on the
6 roadmap or comments to NIOSH.

7 **MR. FITZGERALD:** You know, as we go, I think
8 the point's been made that this is a living
9 document that's going to be added to and
10 corrected and that kind of thing. If we have
11 those kinds of things, we'll send them through
12 the work group to NIOSH for consideration.
13 But we understand the level of detail as well
14 as Mel points out, so we'll try to keep it
15 pretty much in this level.

16 **MS. BEACH:** Okay, and then NIOSH is going to
17 look at RWPs and see how they track with the
18 roadmap. So that's an action.

19 **MR. CLAWSON:** Also, the D&D era.

20 **MS. BEACH:** Roadmap for the RWPs for the D&D
21 era. Any other action items?

22 **MS. DeMERS:** I have a request.

23 **MS. BEACH:** Kathy has one.

24 **MS. DeMERS:** SC&A, when you get a hold of
25 the Appendix E, I'd like to see it.

1 **DR. ULSH:** Okay, I'll let you know when
2 we've definitively located that.

3 **MR. CLAWSON:** And I don't care who does it,
4 I'd sure like to try to find something,
5 because, you know, I guess part of my problem
6 is they're reverting back. I've heard
7 glovebox referred to as hot cells or whatever
8 like that. I don't have a problem with that.
9 I'm just trying to draw a mental picture
10 versus the Old Cave versus the New Cave and
11 what, in my interviews, what was discussed in
12 that.

13 **MR. CHEW:** Josie, you can put an action item
14 and we will look at it.

15 **MR. CLAWSON:** I'd appreciate it.

16 **MR. PRESLEY:** There's a website that is
17 entitled -- this is Bob Presley by the way.
18 It's on here and it states that the Old Cave
19 was an A and L design. It's got the
20 dimensions, any windows --

21 **MS. BEACH:** Can you e-mail that?

22 **MR. PRESLEY:** -- I can give you the website.

23 **MS. BEACH:** E-mail the link. That would be
24 great.

25 **MR. PRESLEY:** It's a good site. There's

1 some pictures of another one, showing some of
2 the stuff on here.

3 **MR. CLAWSON:** Well, I want to make sure that
4 we're up to that because some of the questions
5 came up on the ventilation and so forth and
6 how we got into the radon issue. And I know
7 we're not discussing that, but that's just
8 kind of feeds along with it of how everything
9 was set up and so forth like that. So if you
10 can find anything, I'd appreciate it.

11 **NIOSH RESPONSES TO MOUND MATRIX ITEMS**

12 **MS. BEACH:** Okay, in the next 20 minutes
13 what I'd like to see us do, we did not get
14 into the Mound matrix items. Joe did promise
15 to send the status of that. I don't know who
16 wants to go first or where they'd like to go
17 for --

18 **MR. FITZGERALD:** Can I jump in?

19 **MS. BEACH:** Yes.

20 **MR. FITZGERALD:** There's several that I
21 think would be useful to get a, sort of a
22 status on, issue two on radon. I think I
23 understand what NIOSH is indicating in that
24 one in terms of the data points that have been
25 found for radon associated I guess with the

1 D&D that took place in the Old Cave. And I
2 guess my question is I know you're going
3 through that data, and certainly the proposal
4 of that could represent an upper bound for SW
5 and R in terms of exposure. Is that data
6 going to be available or an analysis of that
7 data going to be available soon?

8 **MR. STEWART:** Currently, the data is, the
9 data are available. An analysis is not yet
10 available. When we get that done, we will
11 share it. And that is exactly the point, to
12 create a bounding dose estimate of radon for R
13 and SW using these data from the '50s which
14 will, I feel quite confident, overestimate
15 dose to individuals later.

16 **MR. FITZGERALD:** Now you indicate including
17 even some short-lived species. Is that
18 referring to perhaps the fluoron or acnon?

19 **MR. STEWART:** Yeah, we're going to take a
20 look at what the exact constituents of this
21 are. Just a kind of historical note. It's
22 very obvious when we went back and looked at
23 these health physics reports that the Old Cave
24 was a big problem. They had several plans to
25 decontaminate it and re-use it.

1 And, in fact, when they concluded the
2 radium-actinium program, the plan was to decon
3 it, leave it for awhile and then modify it for
4 further uses down the road. But they saw that
5 they had a short-lived alpha problem resulting
6 from the cave that resulted in them completely
7 decommissioning it which did not eliminate
8 their radon problems.

9 They still had high radon
10 concentrations as we saw in the results from
11 the 1980s. And for that reason we will create
12 a bounding dose estimate for that intervening
13 time period that we don't have data for. And
14 this will affect the very small number of lung
15 cancer claims that are currently not
16 compensated at this point.

17 **MR. FITZGERALD:** Is it possible -- and this
18 is sort of related to a question to identify
19 the worker population that was exposed, or is
20 it just assuming certain rooms within those
21 two buildings?

22 **MR. STEWART:** Well, I'm not sure how we will
23 approach, but it is problematic to identify
24 workers who never went into R or SW. Again, I
25 think we're talking about fewer than ten

1 cases. And I suppose we could say whether
2 they were non-radiological workers or not, but
3 I don't know that we'll define it any more
4 specifically than that.

5 **DR. ULSH:** Joe, in the meantime if you want
6 to get kind of a preview, I'd refer you to the
7 health physics progress reports that are
8 available on the SRDB.

9 **MR. FITZGERALD:** Yeah, I saw the reference.

10 **DR. ULSH:** They have a periodic, I'm sorry,
11 a recurring table in there that gives the air
12 monitoring data for short-lived daughter
13 products.

14 **MR. FITZGERALD:** Okay. I think the approach
15 is founded. I look forward to seeing the
16 details.

17 I'm going to jump around a little bit.
18 I'm not sure how much time we're going to end
19 up having. We can maybe backfill as we go. I
20 just wanted to revisit issue five, something
21 we raised in terms of Pu-240 and -241. And I
22 think we've converged on agreement that this
23 involves more of a question of the relative
24 concentration of the isotopes, but that would
25 certainly be more of a site profile issue. So

1 we would recommend that one as an SEC issue be
2 closed.

3 **MS. BEACH:** Okay, is everybody in agreement
4 with that?

5 (no response)

6 **MS. BEACH:** So at this time issue number
7 five is now closed as an SEC issue. It is now
8 under the heading of a site profile issue.

9 Thank you, Joe.

10 **MR. CLAWSON:** This is Brad. While we're on
11 Health Physics 101, I'd just, we've kept
12 talking -- and excuse my ignorance on this,
13 but I'm just trying to figure this because
14 when we do a bioassay, and we're looking for
15 gross alpha, that would show what it was at
16 that time. You know, he could have got two
17 months before and it's decaying down to this.
18 How do we bound, you know, I'm trying to
19 figure how you guys do this because you know
20 what it is there, but --

21 **DR. ULSH:** This is a recognized problem that
22 you pull a sample, a urinalysis sample at a
23 particular point in time. You're not always
24 able to tie that to a particular incident or a
25 particular intake. And I always mess this up

1 so I'm going to leave it to Don to fill in the
2 details. But it has to do with going back in
3 history and when was the last bioassay result
4 taken.

5 Don, fill that in, will you?

6 **MR. STEWART:** It depends on the amount of
7 data available on the claim, and in general,
8 the more data that are available the more
9 accurate the dose reconstruction would be.
10 Our typical problem is to correlate a
11 presumptive exposure with a negative result
12 since very many people are tested for intakes
13 for excretions of radionuclides and don't have
14 a result above a minimum detectable amount.
15 So that's our biggest problem. But we will
16 relate that, we can go back and do that and I
17 always attempt to go through all of this and
18 start it out.

19 **MR. CLAWSON:** I'm sure you guys on the phone
20 will enjoy this. I hope that you can bear
21 with me though.

22 **MR. STEWART:** So for a given individual, we
23 might have dose results from '49 to '65 and
24 have data points all over the place. So we
25 have to make some assumptions about when he

1 had an intake and what that intake might have
2 been. We don't always go to all that trouble,
3 frankly. We say, okay, this guy started in
4 '49, ended '67. Let's just make it easy on
5 ourselves. Fit the highest point and that's
6 his intake. So that's how we'll characterize
7 that one. That one was easy. And typically
8 an overestimate is easy. If the guy is going
9 to ^ based on a simple result, you're going to
10 plot that first point --

11 **UNIDENTIFIED SPEAKER (by Telephone):** Hello?

12 **MR. CLAWSON:** Hello.

13 **MS. BEACH:** We're still here. Don's
14 drawing. Hang on.

15 **DR. MAURO (by Telephone):** Joe, can you hear
16 me?

17 **MR. FITZGERALD (by Telephone):** I can hear
18 you.

19 **DR. MAURO (by Telephone):** I can't hear the
20 group any longer.

21 **MR. ELLIOTT (by Telephone):** Hi, this is
22 Larry Elliott. I believe we've lost the
23 conference room at the hotel.

24 **MS. BEACH:** We can still hear you. We had a
25 paper over it, sorry.

1 **MR. CLAWSON:** You know how Ray gets. He put
2 a paper on his own mike.

3 **DR. ULSH:** While we were off we settled all
4 the issues.

5 **MR. STEWART:** I was talking about how we
6 would fit a bioassay data to a given intake.
7 And the point I was trying to make in my
8 roundabout way is that we typically do it one
9 of two very easy ways. In a case where we can
10 assign a lot of dose to the organ and not make
11 the claim compensable, we will overestimate
12 the dose by picking one of the higher points
13 or picking a dose excretion curve that's not
14 credible and results in a large dose but does
15 not make the case compensable.

16 Conversely, if we have a simple
17 compensable case, say it's a lung cancer and a
18 person worked with Plutonium-238, we could
19 often pick one or two data points, neglect the
20 rest and you can see that this clearly, this
21 curve, clearly moves under the data. We are
22 underestimating dose, and that's a compensable
23 case. So to answer your question, we don't
24 often do it in a lot of detail.

25 However, sometimes we are required to

1 do that. We'll go back, and we'll look
2 because some claims that are kind of around
3 the compensation region so we have to
4 accurately estimate the dose. And we can do
5 that if we have sufficient data.

6 **MR. CLAWSON:** If you use the high curve that
7 you're talking about there, do you have to
8 have two or three more data points to be able
9 to get at that? Because my one point is, is
10 like the one that you have circled there. Say
11 that was six months down the road, this point
12 in time he had this much. That's what he's
13 going to get. But actually, if you went back
14 it would have been higher.

15 **DR. ULSH:** That's exactly what we do though.
16 We go back to the previous bioassay result.

17 **MR. CLAWSON:** So the previous bioassay.

18 **MR. STEWART:** Whatever it is.

19 **DR. ULSH:** So let's look at a different
20 case, Brad, where you've got a point out here
21 that's a positive result.

22 **MR. CLAWSON:** All right.

23 **DR. ULSH:** Well, when did that happen? It
24 could have been the day before. It could have
25 been the day after his last bioassay result.

1 We don't know. It could be anywhere in there.
2 So what we're going to do --

3 **MR. CLAWSON:** Okay, that's what I was trying
4 to understand.

5 **DR. ULSH:** Did I say anything wrong?

6 **MR. STEWART:** Well, if we have a presumptive
7 intake which occurred somewhere in this point
8 in time, we typically assume that it's halfway
9 in between and that being the most logical
10 approach given our approach for external dose
11 which is to assign limited detection to.

12 **DR. ULSH:** I think that's right. That's
13 also what ICRP recommends, right?

14 **MR. STEWART:** Yes, that's an ICRP
15 recommendation. So that's what we do.

16 We don't have to do that a lot. A lot
17 of times we'll have case-specific data. When
18 we do it's kind of a big deal to go back and
19 look at it and make sure it's not overly
20 claimant favorable and certainly does not
21 underestimate the dose.

22 **MS. BEACH:** Now I have a quick question.
23 Once we close this and it becomes a site
24 profile issue, what happens to it? Do you do
25 something to change the site profile or, and

1 will we hear about that?

2 **MR. CLAWSON:** This kind of falls into the
3 realm of I know that the site profile is a
4 living document, but how to us in the work
5 group do we keep up with the site profile and
6 changes?

7 **DR. ULSH:** I think that's a question for
8 Chia-Chia. We are going to be revising the
9 TBD as an outcome of the SEC process. There's
10 going to be a lot of issues here that, you
11 know, who know how this is going to turn out,
12 so we are planning to do that. Now, in terms
13 of once the SEC part of this process is closed
14 out, however it turns out, well, then we move
15 into revising the TBD. And I --

16 **MS. CHANG:** I don't know. There's not a
17 work group on the Mound site profile, and is
18 there a work group on site profiles in
19 general?

20 **MR. CLAWSON:** No, this is not just unique to
21 the Mound work group. As we go into the SEC
22 petitions and so forth like that a lot of
23 times the TBDs do change. I guess my thing is
24 is how are we going to be able to track these
25 because we don't want to lose them. We want

1 to be able to see how they change.

2 **MS. BEACH:** See, I don't want to drop it and
3 then never hear about it again. That's why
4 I'm asking.

5 **DR. ULSH:** I can tell you internally this
6 document that I've put together here, NIOSH
7 Responses to Non-Matrix Items, I've got Issue
8 Status. And let's say we close number five as
9 an SEC issue, I would add a status on there
10 saying SEC closed, TBD opened, or something
11 like that.

12 **MR. FITZGERALD (by Telephone):** And Josie,
13 I'm sure Larry can also confirm that the Board
14 has this as a generic issue in terms of how to
15 handle site profile closures as well as issues
16 coming in from SECs. And we have the same
17 issue for Y-12 and some other sites. And that
18 discussion's been ongoing.

19 **MS. BEACH:** Okay.

20 **DR. MAURO (by Telephone):** So, Josie, this
21 is John. By way of precedent in the past I
22 could say for Hanford and for the Nevada Test
23 Site what happened in those cases was almost
24 perhaps the reverse of what we're talking
25 about now. In those cases a site profile

1 group was formed, working group, was formed
2 and then when the SEC issue, SEC was issued
3 and that process began.

4 What happened was the Board voted on
5 this and merged the two basically saying,
6 okay, Hanford, your mandate now is not only
7 the site profile, but it is also the SEC
8 petition. So that the two were really under
9 the same umbrella. And what has been
10 happening is the SEC issues usually take front
11 and center, and we allow the issues to fall
12 into, just as we're doing now, into the site
13 profile when that emerges from the process.

14 But the good thing is from the others
15 is that there is a place to catch them.
16 Namely, there is a site profile working group.
17 My guess is at the next Board meeting this
18 certainly could be something that could be
19 brought up by the SEC work group on whether or
20 not your mandate should be expanded to include
21 for it also to be the site profile work group.

22 **MS. BEACH:** Thank you for that, John. I
23 guess I haven't been through a lot of this,
24 and I wanted to make sure where it was
25 captured. I appreciate that.

1 We now have about less than eight
2 minutes left so, Joe, I know we cut you off.

3 **MR. FITZGERALD (by Telephone):** No,
4 actually, I think -- just trying to wrap
5 things up. Issues one through nine, with the
6 exception of the one we closed out on five,
7 are really kind of similar issues. They deal
8 with specific nuclides, questions of
9 significance from an exposure potential
10 standpoint and demonstrated dose estimation
11 techniques that would satisfy the SEC
12 concerns.

13 And I think coupled with the roadmap
14 we're going to be focusing on this long
15 awaited records retrieval that we're going to
16 hopefully get to in August. And I think a lot
17 of these issues of significance and presence
18 and exposure potential and what not, I think
19 we can resolve in that context. So these were
20 very similar issues. We could go through each
21 of them, but I think it comes down to how
22 significant were they in terms of exposure
23 potential and is there an above and beyond a
24 dose estimation technique.

25 And we've talked a little bit about

1 gross alpha and what have you, but is there a
2 technique that can be used that's claimant
3 favorable. So we'll take it upon ourselves to
4 carry these through in terms of our
5 investigation next month, but we will provide
6 an issue-by-issue response, as I indicated
7 earlier, to each of these in response to the
8 NIOSH paper.

9 **MS. BEACH:** And possibly we can think about
10 getting back together late September
11 timeframe. We're not going to set a date
12 obviously today, but this gives us a path
13 forward.

14 **MR. FITZGERALD (by Telephone):** Right.

15 **DR. ULSH:** In the five minutes that remain,
16 Josie, are there any issues that jump out in
17 your head as being the top issues that you
18 would like to see us pursue? I mean, there
19 are a lot of issues on the table here.

20 **MS. BEACH:** Right. Do you mind if I get
21 that back to you in an e-mail and the work
22 group?

23 **DR. ULSH:** Not at all.

24 **MS. BEACH:** Because I have mine listed as
25 high, medium, and I think most of them are

1 listed as high.

2 **MR. FITZGERALD (by Telephone):** I might add
3 we're doing a survey, internal review, on
4 completeness of the internal side. I think we
5 discussed the external piece that Ron brought
6 up this morning, but we are working on that.
7 And that pertains to, I guess, issues 11, 12,
8 somewhere in that neighborhood, so that's
9 ongoing as we speak.

10 **MS. BEACH:** Okay.

11 **DR. MAURO (by Telephone):** Josie, this is
12 John again. By way of this, what I guess
13 these issues related to going in and looking
14 at the data completeness, data adequacy, the
15 kinds of matters that Joe just made reference
16 to, it appears that a process has taken hold
17 on other sites, specifically the Nevada Test
18 Site and Fernald whereby what I would call the
19 data reliability, completeness issue is
20 always, of course, fundamental to anyone of
21 these SECs. And these issues have come up
22 obviously during this conversation. What has
23 been done in the past is after, let's say, a
24 meeting such as this --

25 And, Joe, you may already be well on

1 top of this so please let me know if it's
2 something that you've already taken care of.
3 The first thing we do is put together what I'd
4 call an overarching plan which identifies what
5 I call the strata. That is, what facilities,
6 what time periods, what categories of workers,
7 perhaps what types of exposures are subjects
8 of interest by way of data validation. It
9 might be neutron exposures. It could be some
10 type of radionuclide, internal radionuclides.

11 In other words you identify those
12 datasets that are going to be important for
13 dose reconstruction for the individual workers
14 and also for building coworker models when
15 coworker models are needed. So that's the
16 first step is actually to sort of lay out what
17 I call a master plan in terms of what are the
18 categories of data that would be worth
19 sampling in order to demonstrate that there is
20 a robust dataset covering each of these
21 strata.

22 And that's, in the past when presented
23 to the work group, the work group would
24 discuss it and then say, yes, we'd like you to
25 proceed with that. And then we would go ahead

1 and move forward with what I call a sampling
2 plan of, okay, how many cases will we sample
3 from this strata and from that strata. The
4 intent of which is when we're done we'd be
5 able to say something insightful about the
6 completeness and adequacy of data for each of
7 the strata.

8 Now, I guess, this is what we've been
9 doing on other SEC, large SEC petitions and
10 evaluation reports. It sounds like the same
11 type of thing is starting to take form that
12 has emerged but not in that type of structured
13 approach. You've already identified a couple
14 of areas, but it seems that are all the areas
15 of interest, are they in the process of being
16 defined?

17 **MR. FITZGERALD (by Telephone):** Well, I
18 think more for internal just to answer your
19 question. I think for external it was a
20 little more straightforward in terms of the
21 MESH database and Ron -- yeah, you were on the
22 phone for Ron.

23 **DR. MAURO (by Telephone):** Yes, I was.

24 **MR. FITZGERALD (by Telephone):** Identified
25 pretty much what you called the strata in

1 terms of the cross-section of the facilities,
2 timeframes and types of exposures. And that
3 was the sampling in the sampling size as well.
4 So I think the only difference is the, we
5 didn't present a sampling plan before the --
6 well, this is only the second meeting. But we
7 didn't present a sampling plan between the
8 first and today's meeting.

9 We went ahead using the entrée to the
10 MESH database, and went ahead and did an
11 evaluation based on a strata that we
12 identified. So that's kind of what Ron
13 presented this morning which was the initial
14 sampling on the external side.

15 Now, on the internal side, that's a
16 much more complex picture as you can guess.
17 And that investigation's going on right now as
18 far as trying to figure out what a sampling
19 plan for these various internal sources would
20 look like. So if the work group wants, we
21 certainly can come forward with a plan for
22 consideration. Again, I think it would have
23 to be sooner rather than later because late
24 September would be too late for this exercise.
25 We're already sort of getting involved with

1 it.

2 **DR. ULSH:** Josie, I'm a little confused
3 because I thought at the last working group
4 meeting -- and I might have this wrong -- that
5 we had talked about PORECON and PURECON and
6 MJW's, for lack of a better word, validation
7 of the two databases and how extensive it was.
8 However, there was not a corresponding
9 analysis of the external dataset. So I wasn't
10 really surprised to see SC&A send over the
11 external data completeness investigation. Did
12 I miss something? Are we going to do that
13 same kind of thing on internal?

14 **MS. BEACH:** Yes. That one just covered
15 external, I believe.

16 **DR. ULSH:** Right, but MJW did in their big
17 dose reconstruction project, they reviewed
18 PORECON and PURECON and found a very low error
19 rate.

20 **MS. BEACH:** But I believe that has not been
21 completed yet for the internal.

22 Joe, do you want to speak to that?

23 **MR. FITZGERALD (by Telephone):** I think what
24 we had indicated we would review the Meyer
25 report and review the MJW QA/QC from the dose

1 reconstruction. And we've been through that
2 and have done that although we're not quite
3 prepared to present the review results. But I
4 think we initially said that the MJ review
5 looked fairly robust in that we were focused
6 on validating some of the radiochemistry
7 procedures and were going to sample to get
8 some feel for how that was done. But this
9 would be likewise a very limited sample in
10 terms of a plan, but it would be on the same
11 level probably as what we discussed on
12 external. But this would be coupled with what
13 we did do which was to read two reviews.

14 **MS. BEACH:** I meant to say that earlier, but
15 it said external so I assumed that everybody
16 realized we were just talking about external.

17 **DR. ULSH:** Yeah, I knew that but at the
18 previous working group meeting when MJW did
19 their dose reconstruction back in, was it '95,
20 it was the pre-'89 dose reconstruction. I
21 think it was completed in '95. They were
22 looking at internal doses, and they reviewed
23 all of the internal data, compared it to the
24 hard copy data, but that hadn't been done for
25 external. So I thought that's why SC&A was

1 focusing on the external part.

2 **MS. BEACH:** And then they were going to do a
3 review of the internal as well just to make
4 sure the data integrity, completeness was the
5 same.

6 **MS. CHANG:** This is Chia-Chia. I'm going to
7 jump in here for a second. I believe because
8 we're coming onto the end of the fiscal year,
9 meetings before September 30th will have to be
10 scheduled by the end of this month, before
11 August. You could do this by e-mail and just
12 figure out your best schedule, but just so you
13 know you'll have to I think give Zaida the
14 date if you're going to schedule it before the
15 end of the fiscal year, before August.

16 **MS. BEACH:** Okay. And again, I apologize
17 for the rush, the lateness of the hour now.

18 Joe, did we finish on the sampling
19 plan? Does the work group want a sampling
20 plan submitted, or are we going to wait for
21 what Joe has, what John suggested?

22 **MR. FITZGERALD (by Telephone):** And this
23 approach is going to reflect I think some of
24 what Brant just said that we've looked at
25 PORECON and certainly it looks adequate. We

1 would not propose to re-do much of what MJW
2 did on PORECON, PURECON. Some of this really
3 gets into areas that, based on the review that
4 we did do of the MJW work and the Meyer
5 report, are areas of interest where maybe it's
6 not quite as clean.

7 So this is definitely a mixed bag.
8 We're not going to propose replicating any of
9 the work that to our way of thinking is pretty
10 thorough and demonstrable. But there are some
11 issues with certain radionuclides, and I think
12 there's some questions on the tritium that we
13 would like to at least look at that from the
14 standpoint of what was done.

15 So we can certainly bring this
16 forward, and I would certainly invite work
17 group comment, NIOSH comment if you want to do
18 it. But I don't think we have time to wait
19 until the end of September if we're going to
20 pursue this. I'd like to make that a nearer-
21 term response if we could do it.

22 **MS. BEACH:** At this time I'd like to just
23 leave it open, and we can think about it and -

24 -

25 **MR. FITZGERALD (by Telephone):** All right.

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MS. BEACH: So then I would like to call,
unless anybody has a comment, a question.

(no response)

MS. BEACH: I'd like to go ahead and close
the Mound work group meeting. Thank you all.

(Whereupon, the working group meeting was
adjourned at 3:35 p.m.)

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CERTIFICATE OF COURT REPORTER**STATE OF GEORGIA****COUNTY OF FULTON**

I, Steven Ray Green, Certified Merit Court Reporter, do hereby certify that I reported the above and foregoing on the day of July 14, 2008; and it is a true and accurate transcript of the testimony captioned herein.

I further certify that I am neither kin nor counsel to any of the parties herein, nor have any interest in the cause named herein.

WITNESS my hand and official seal this the 8th day of January, 2009.

STEVEN RAY GREEN, CCR, CVR-CM, PNSC**CERTIFIED MERIT COURT REPORTER****CERTIFICATE NUMBER: A-2102**