

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

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ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

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WORK GROUP ON MOUND

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MONDAY,

OCTOBER 27, 2008

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The work group convened in the Frankfurt Board Room at the Cincinnati Airport Marriot, 2395 Progress Drive, Hebron, Kentucky, at 9:30 a.m., Josie Beach, Chair, presiding.

BOARD MEMBERS PRESENT:

- JOSIE BEACH, Chair
- BRADLEY P. CLAWSON
- ROBERT W. PRESLEY
- PHILIP SCHOFIELD
- PAUL L. ZIEMER

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ALSO PRESENT:

TED KATZ, Designated Federal Official
LARRY ELLIOTT, NIOSH ORAU
ROBERT MORRIS, NIOSH ORAU
BRANT ULSH, NIOSH
DON STEWART, ORAU
JENNIFER HOFF, ORAU
KARIN JESSIN, ORAU
BRYCE RICH, ORAU
LEO FAUST, ORAU
GENE ROLLINS, ORAU
JOYCE LIPSZTEIN, SC&A
BOB ALVAREZ, SC&A
BOB BISTLINE, SC&A
RON BUCHANAN, SC&A
NANCY ADAMS, NIOSH Contractor
KAREN HATCH, Department of Energy
JEFF COACH, Department of Labor
DOUG BABCOCK, Office of Senator
Sherrod Brown
JOHN MAURO, SC&A
JOE FITZGERALD, SC&A
KATHY ROBERTSON-DEMERS, SC&A
LIZ BRACKETT, ORAU
EMILY HOWELL, Health and Human
Services

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

2 (9:30 a.m.)

3 MR. KATZ: Good morning. This is
4 the Mound Working Group of the Advisory Board
5 of Radiation Worker Health. Someone on the
6 phone, just let us know you can year.

7 MEMBER SCHOFIELD: Philip
8 Schofield.

9 MR. KATZ: Oh, Phil, great. Hi.

10 MEMBER SCHOFIELD: How are you
11 doing? Good morning.

12 MR. KATZ: Okay. So, we're just
13 going to start now with introductions of the
14 board members, if -- starting with Josie, the
15 Chairperson.

16 CHAIR BEACH: I'm Josie Beach,
17 Mound Chair and no conflicts.

18 MEMBER CLAWSON: Brad Clawson,
19 board member, no conflict.

20 MEMBER SCHOFIELD: Phil Schofield,
21 board member, no conflicts.

22 MEMBER PRESLEY: Robert Presley,

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1 board member, no conflict.

2 MR. KATZ: Okay. And are there
3 any other board members on the phone?

4 Okay, no problem there. Now, if
5 we go around the room, first with the NIOSH
6 ORAU team, please identify yourself and your
7 conflicts.

8 MR. ELLIOTT: Larry Elliott,
9 Director of OCAS, no conflict.

10 MR. MORRIS: Robert Morris, Oak
11 Ridge Associated University Team, no
12 conflict.

13 MR. ULSH: Brant Ulsh with NIOSH,
14 no conflict.

15 MR. STEWART: Don Stewart, ORAU, no
16 conflict with Mound.

17 MS. HOFF: Jennifer Hoff, ORAU
18 Team, no conflict with Mound.

19 MS. JESSIN: Karin Jessin ORAU
20 Team, no conflict with Mound.

21 MR. KATZ: And the NIOSH ORAU Team
22 on the phone, please?

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1 MR. RICH: Bryce Rich, I have a
2 conflict with Mound, all ORAU Team.

3 MS. BRACKETT: Liz Brackett, ORAU
4 Team. I've no conflicts.

5 MR. FAUST: Leo Faust, ORAU Team,
6 no conflict.

7 MR. ROLLINS: Gene on the ORAU
8 Team, no conflicts.

9 MR. KATZ: That was Ms. Brackett
10 if you couldn't hear the first one. Okay,
11 now, SC&A on the telephone.

12 MS. LIPSZTEIN: Joyce Lypstein, no
13 conflict.

14 MR. ALVAREZ: Bob Alvarez, no
15 conflict.

16 MR. BISTLINE: Bob Bistline, no
17 conflict.

18 MR. BUCHANAN: Ron Buchanan, no
19 conflict.

20 MR. KATZ: Okay. Now, other
21 federal employees starting in the room,
22 please.

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1 MS. HOWELL: Emily Howell, HHS, no
2 conflict.

3 MS. ADAMS: Nancy Adams, NIOSH
4 contractor, no conflict.

5 MR. KATZ: And on the telephone?

6 MS. HATCH: This is Karen Hatch
7 with the Office of Legacy Management,
8 Department of Energy, Morgantown, West
9 Virginia.

10 MR. COACH: Jeff Coach with Labor.

11 MS. AL-NABUSI: Isaf Al-Nabusi,
12 CDOE.

13 MR. BABCOCK: Doug Babcock with
14 Senator Sherrod Brown.

15 MR. KATZ: Any other congressional
16 staff? Okay. Then members of the public,
17 please, if you would like to identify
18 yourself, beginning with petitioners.

19 Okay. And we left off SC&A people
20 in the room, sorry.

21 MR. MAURO: John Mauro, SC&A, no
22 conflict.

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1 MR. FITZGERALD: And Joe
2 Fitzgerald, SC&A, no conflict.

3 MS. ROBERTSON-DEMURS: Kathy
4 Robertson-Demers, conflicted.

5 MR. KATZ: Okay. That's
6 everybody. Then just a piece of advice about
7 phone etiquette. Please, when you're not
8 speaking, if you're on the phone, please use
9 *6, or your mute button, so it doesn't
10 interrupt the discussion in here. Much
11 thanks. And now, please don't put the call
12 on hold. Anybody, if you need to discontinue
13 for a while, please disconnect and call back
14 in. Much thanks. And it's all yours, Josie.

15
16 CHAIR BEACH: All right. Thank
17 you. Has everybody got the reports that were
18 sent out starting with the very first one,
19 the Issue 9, ceramic Pu-238? That is where
20 we are going to start this morning. And I'm
21 going to turn it over to SC&A.

22 MR. KATZ: Okay.

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1 MR. FITZGERALD: Yes, thank you,
2 Josie. I'm going to start it and we have all
3 the internal dosimetrists both in the room,
4 and from -- so, I won't be long on this. But
5 just a little background.

6 You know, originally SC&A had
7 raised a question about the solubility of
8 high fired plutonium-238 oxide at Mound, as
9 part of our site profile review. I think
10 it's been acknowledged as something that's
11 been understood as being present at Mound.
12 But we felt that the experience with
13 analyzing the behavior of this material at
14 other sites in particular, we have done a
15 review at Los Alamos and certainly, that
16 figured in that review as well, that this was
17 an implication that needed to be addressed as
18 part of the SEC.

19 And we didn't find that to be the
20 case as far as having addressed in either the
21 site profile, from the standpoint of looking
22 at the implications or in the evaluation

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1 report. So, as part of our matrix review, we
2 highlighted the fact that high-fired
3 Plutonium-238 oxide ceramitized, ceramitized,
4 I think is another way to put it, does exist
5 at Mound, and pointed to some of the
6 analogous studies that have been done in
7 particular in study that was done at Los
8 Alamos, involving eight individuals exposed
9 in an event there, as illustrative of the
10 implications of having high-fired 238 oxide
11 with the low solubility and the kind of
12 behavior you might get, and the complications
13 that presents to dose reconstruction. Now,
14 in this case, we're not making any judgment,
15 or prejudgment as to whether it can be dose-
16 reconstructed, we're just saying that
17 certainly, that behavior would need to be
18 appropriately modeled. And it would need to
19 be demonstrated that you could, in fact, with
20 the right parameters, come up with
21 sufficiently accurate values for those dose
22 reconstructions.

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1 So, in any case, we did receive a
2 white paper in response to that initial flag,
3 if you were, from NIOSH back in, I guess it
4 was July, or maybe before that, even,
5 actually. And what was presented in that
6 white paper was the issue addressed from the
7 standpoint of demonstrating, at least with
8 the data that was available, that their
9 interpretation since the NIOSH ORAU Team's
10 interpretation of that data was that the
11 phenomenon that was observed in the Los
12 Alamos cases, did not seem to be present
13 based on the data that we looked at from
14 Mound.

15 And that's a very, very short
16 summary of what was a pretty detailed paper.

17 So, just that was kind of the bottom line
18 that we took from there. In our analysis, we
19 wanted to go back and look at the, I think it
20 was 896 -- the urine data -- case data, that
21 was given us by NIOSH. And using that data,
22 do some sampling and try to determine if we

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1 could in fact, as NIOSH interpreted, come up
2 with the same interpretation that, no, you
3 would not see the same kind of phenomenon.

4 The phenomenon I'm talking about
5 is a lag in terms of seeing the plutonium in
6 the urine, because of it being held up in the
7 body because of the insolubility. And long
8 story short, we'll get into more detail in
9 the white paper. We found it to be at the
10 very least ambiguous, as far as what the data
11 would suggest.

12 I mean, in some cases, we -- in
13 terms of the samplings that we took, found
14 situations where we could see the same
15 curves, the same phenomena being played out
16 that you would expect if you had highly
17 insoluble plutonium P-238 oxide. And so,
18 what we had come up with in terms of that
19 review, is that we don't believe we can rule
20 it out. And we think there's enough evidence
21 that that phenomenon can be seen when in a
22 number of the urine plots. That we believe

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1 it needs to be demonstrated more.

2 Again, not coming to a bottom line
3 yet, but we feel that enough cases for
4 demonstrating further, that you don't have
5 the high-fired 238 oxide with the
6 insolubility that we've seen at other sites.

7 Based on this evidence as well, there's some
8 bench-scaled solubility studies.

9 And this was something that the
10 work group had asked us to look at, which is
11 going back and digging up some of the -- we
12 did some bench solubility and particle size
13 investigations at Mound. And those studies
14 clearly showed that a high fraction in some
15 cases, leaked Pu-238 oxide, was in fact
16 insoluble, class YY or SS, whatever
17 terminology.

18 We're not using the Type J as
19 you'll see in the white paper, as a
20 nomenclature because again, we're not sure if
21 the behavior of this material at Mound is
22 identical with the behavior at Los Alamos. I

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1 mean, it may be, but at this point, we don't
2 have enough evidence to suggest that. So,
3 we're kind of using, you'll see terminology,
4 we're using a hot -- you know a -- let's see
5 --

6 MR. ULSH: Type K.

7 MR. FITZGERALD: Type K, or I
8 think, we also used nonstandard solubility
9 type, something that denotes that, you know,
10 we're not sure exactly what these curves look
11 like, but certainly they exhibit the same
12 characteristics as a so-called Type J that
13 was observed at Los Alamos.

14 So, I think in general, based on
15 the data points that were provided to us,
16 we've taken this a little further, have
17 looked at it, sampled it, but feel we're not
18 convinced yet that you can't rule out this
19 phenomena. And coupled with the literature
20 and the events that we evaluated, and there
21 was a couple of events for which there is
22 data, we feel there's a fair amount of

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1 evidence that tilts the other way.

2 So, that's kind of where we came
3 out with this. And at the very end of the
4 piece, not wanting to just present a
5 hypothesis on a problem, but go a little
6 further and say, well, how would you perhaps,
7 this is for the worker's benefit, how would
8 you try to settle this out, being, you know,
9 we looked at the same data, come up with a
10 different conclusion. How could one settle
11 this out?

12 We identified, I think, seven
13 validation points to say, you know, if one
14 could walk through these validation steps, we
15 believe it would clarify where this comes
16 out, let the chips fall where they may. And
17 the other thing I would say, just to qualify
18 what we reviewed, these data points were not
19 easily interpretable. I mean, you know, the
20 scale that we were looking at, was not
21 logarithmic. So, the first 100 days, which
22 is kind of crucial, we're looking at the lag,

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1 it was really hard to distinguish given the
2 data points.

3 So, we did the best we could. But
4 I think what it would benefit from, perhaps,
5 the kind of analysis that would focus in on
6 that critical time period following what
7 would be the exposure, the intake, and to
8 look at whether or not you're seeing the kind
9 of phenomena that suggests insolubility.

10 So, again, we sampled the cases,
11 looked at the curves, found it either
12 ambiguous, or in some cases suggestive of
13 this insolubility class we're talking about.

14 But we also found cases that were suggestive
15 of Type S NEP. So, I mean, I think it's a
16 bit of a mixed bag. That's kind of where
17 we're left at this point.

18 I would invite Kathy or Joyce or
19 Bob Bistline, our internal dosimetry, sort
20 of, expert group, to chime in each one. Is
21 there anything I left out, or anything you
22 want to add?

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1 MR. KATZ: Just, before you do
2 that, just let the record recognize Dr.
3 Ziemer, who is an alternate member of the
4 work group, has joined us as well.

5 MR. FITZGERALD: Joyce, Bob, or
6 Kathy, anything in terms of summarizing the
7 white paper? I guess that was a reasonable
8 summary.

9 MS. ROBERTSON-DEMERS: Well, yes,
10 Joe did a pretty good job. But one of the
11 difficulties that I had when looking at the
12 plots, was that the data was actually gross
13 alpha, and not plutonium-238. And that may
14 explain some of the discrepancy between what
15 we see at Los Alamos and what is being seen
16 at Mound.

17 MR. FITZGERALD: And we're still,
18 just to add a little bit more to that,
19 looking at the radio-chemistry of gross alpha
20 in sort of another venue on the issue of
21 weapon. But this comes up in a number of
22 places, and we, you know, this question of

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1 whether one can discriminate through gross
2 alpha over that time period, is a technical
3 question that we want to unpack a bit more.
4 And we're preparing yet another white paper,
5 which we're hoping to have in your hands
6 probably in a few weeks.

7 So, these are connected, and this
8 is another implication of the connection to
9 this paper issue as well. It may add to some
10 of the discrepancies, but I don't think it is
11 the dominant issue. I think we still are
12 looking at these curves and saying that we're
13 seeing some evidence that there's
14 insolubility at least from the data we looked
15 at.

16 CHAIR BEACH: Joe, you said the
17 white paper, that's on Issue 11, correct,
18 that you're --

19 MR. FITZGERALD: Right. Right.

20 CHAIR BEACH: -- you were just
21 referring to? Thank you.

22 MR. FITZGERALD: And we reference

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1 that in some of the other issues that we're
2 going to talk about today.

3 CHAIR BEACH: Right.

4 MR. FITZGERALD: But that's not
5 quite done. And we hope to get that to you
6 as soon as possible.

7 MS. LIPSZTEIN: Joe, this is Joyce
8 Lypstein. I think you've summarized very
9 well everything that is put actually on the
10 preliminary response white paper. And I
11 think what is very important is, and we've
12 agreed, key questions to our problem, is if
13 NIOSH is capable of recognizing exposures to
14 this special case, such as Plutonium-238
15 exposure with this solubility of Plutonium-
16 238 exposure.

17 From their white paper, they did
18 not recognize the presence of Plutonium-238.

19 And we are dealing with -- it's very
20 difficult to recognize it. But we have some
21 evidence that there was exposures to both
22 special solubility kind. So we come out with

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1 something like that, we have pushed it
2 through expected NIOSH risk analysis that
3 weights exposure to this special Plutonium-
4 238.

5 And second, how are they going to
6 recognize both the exposure cases? Because
7 even if it's possible to build a model for
8 this special solubility type of Plutonium-
9 238, it has to be a model that is better for
10 use for mild exposures. Weak, mild, is
11 different and then the desirable states from
12 the evidence was the publisher, from Sheehan
13 and Woods, describing, telling the incident.

14 Benefitted to this, benefitted to find it in
15 Mound. The model doesn't fit exactly like
16 the way Mound, Los Alamos that incident.

17 And this might be another
18 incident. This special solubility type of
19 plutonium would behave differently. So,
20 we'd have different times from when the
21 mistake happened, and one that you can see it
22 on your NIOSH expression. So, after

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1 recognizing who were the people that were
2 exposed to this special type of plutonium,
3 then NIOSH has perceived -- it can be built,
4 a Mound model for this special solubility
5 type of Plutonium-238.

6 So, first NIOSH tests must state
7 that they had the ability to see an update,
8 and which workers were tagged with the model
9 applied, and which model to apply to the
10 different kinds of incidents that might have
11 happened at Mound. But it's not a simple
12 case. It's a very difficult case. And it
13 came up just, you know, applying for Mound
14 and applying the model from Los Alamos to
15 Mound and without knowing who were the people
16 that were exposed, and how this dosage
17 behavior, this special solubility to type,
18 and at Mound.

19 MR. FITZGERALD: Yes, I think --
20 this is Joe again. I think Joyce is pointing
21 out there was a comment that -- or, actually
22 it was addressed in the NIOSH ORAU white

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1 paper, where it was indicated that if one
2 were to find incidences of low solubility,
3 high-fired Pu, you could in fact apply the
4 Type J, Los Alamos model as an upper bound
5 for those exposures.

6 I think one thing that we point
7 out in this white paper of ours is that that
8 may be fraught with some problems in the
9 sense that there's other issues that come up
10 in terms of the actual compounds that were
11 being used at Mound, and that's one reason
12 more to use the Type J as the handle for what
13 we're seeing at Mound that may be different.

14 That's one aspect of it.

15 And the other thing I think Joyce
16 is pointing out is, sort of going downstream
17 a little further than I did, but if one were
18 to acknowledge that the phenomenon does
19 exist, then there's a need to model it. And
20 I think one thing we pointed early on in this
21 process is that we do not presume or prejudge
22 that a model could not be developed. In

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1 fact, we think it's -- as it has been done at
2 other sites, and as it was done at Rocky
3 Flats, a model can be constructed.

4 But I think maybe the first step
5 is to validate, you know, since we have
6 different conclusions on the same data, that,
7 you know, whether the work group and NIOSH
8 would agree that you were seeing some
9 evidence of this and then validate what
10 exactly are we seeing. And then maybe go
11 beyond that to, can one bound this, or model
12 this and exactly what would that model look
13 like if all the implications that Joyce is
14 raising would be pertinent to that?

15 So, there is a path on this. I
16 mean it's, to borrow John's expressions, I
17 think it's tractable. But you know, again, I
18 think we're at the stage now where we both
19 have taken a good look at the data, and we
20 have you know, different conclusions. But I
21 think there still is a path where we can
22 actually validate and converge on something.

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1 CHAIR BEACH: I do have a
2 question, Joe. On the matrix, the updated
3 matrix, under Issue 9, under Other Comments,
4 the last comment was, particle size is
5 important to the assessment of these
6 radionuclides since you can get different
7 doses for different particle sizes. Can you
8 explain that just a little bit? I mean, I
9 understand the difference in particle sizes,
10 but --

11 MR. FITZGERALD: Well, I think it
12 just gets to the inhalation is a default 5
13 micron, I believe, that's used. It's a
14 question of characterizing whether you're
15 dealing with something different than that
16 default that -- in these situations. And
17 where this comes most important, is with the
18 -- what the heck it was called -- the plasma
19 torch --

20 MR. STEWART: Microspheres.

21 MR. FITZGERALD: -- of
22 microspheres. I think there's certainly not

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1 history there where you're dealing with very,
2 very small particles, fume-size particles
3 which would present a different respiratory
4 issue. So, there is varying particle sizes,
5 we think, in that -- in the operational work
6 place.

7 But I think that's an issue, I
8 think Joyce was kind of hinging on that.
9 When you get to, okay, you agree one, high-
10 fired exists, two, that it exhibits
11 properties that would suggest heightened
12 insolubility, then if there's agreement on
13 those two things, then the next thing would
14 be okay, how do we actually model this, bound
15 it, or whatever. And then, I think particle
16 size becomes more of its parameters. Because
17 I think that effects, you know, the model, or
18 the -- whatever approach you would take.

19 And I think for the plasma you
20 know, plasma torch, that would be a different
21 parameter than say, the different part of the
22 operating line. And there's been some

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1 studies. And the insolubility study it
2 looked at the bench -- it looked at both the
3 solubility of Pu-238 as well as well as
4 particle sizing. So, there's certainly some
5 data.

6 Now, whether it's good operational
7 data, we haven't gone quite that far. We're
8 still a little up stream right now.

9 CHAIR BEACH: Thanks. Ulsh, did
10 you want to?

11 MR. ULSH: I'll start out -- this
12 is Brant Ulsh. I'll start out and just kind
13 of give a big picture of this issue as I
14 understand it. And then perhaps let Liz
15 Brackett who is on the phone, get into some
16 of the more -- some of the details. Liz has
17 much more expertise in internal dosimetry
18 than I do.

19 Just briefly, in terms of
20 development of this issue, as Joe stated,
21 SC&A raised this concern, and we took a look
22 at it and issued a report in advance of the

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1 previous Working Group meeting back

2 -- I don't even know when it was, July?

3 CHAIR BEACH: July 14th.

4 MR. ULSH: And SC&A issued their

5 response to that report a couple of weeks

6 ago. We have had a little bit of time to

7 take a look at SC&A's report. We were not

8 able to finish up a response to that report.

9 We certainly will by the time of the Working
10 Group meeting. But perhaps I can cover some
11 of the main points of what our response is
12 likely to be.

13 The reason this issue was raised,
14 I think, and I'll let Joe jump in if I
15 mischaracterize it, but one situation where
16 this type of material was recognized is known
17 as the Wing 9 incident at Los Alamos. That
18 incident involved a situation where, inside
19 an inert environment, inside of a -- I don't
20 want to call it a glove box, because it's
21 not. It was an isolated chamber.

22 They were cutting open an RTG, a

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1 radio isotopic thermal electric generator.
2 Basically, that is a power source used for
3 space probes. And one of Mound's main
4 missions was to produce Plutonium-238 power
5 sources for the space program.

6 So, one of these power sources was
7 being cut open, disassembled inside of an
8 inert environment at Los Alamos. A couple of
9 situations led to exposure of personnel of
10 this material. Number one, they were cutting
11 it open with a torch after the power source
12 had been subjected to severe vibration
13 testing.

14 And what that vibration testing
15 did, was it ground a lot of the plates, the
16 ceramic plates together, and generated
17 respirable-sized particles of this material.

18 And also, it was fairly fresh material. So -
19 - and that's important for a couple of
20 reasons that if I remember, I'll get into a
21 little bit later.

22 The thing that led to the

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1 exposure, though, was an accident on the
2 glove ports to this chamber. The actual
3 cutting was done inside the chamber and there
4 were some glove ports, and there was a leak.

5 And a couple of other events, positive
6 pressurization inside the chamber, led to
7 this material being ejected into the
8 environment where workers were present, and
9 so they inhaled this material.

10 And it was an unusual type of
11 Plutonium exposure in that it was a non-
12 monotonic excretion curve. So what that
13 means is, immediately after the incident, you
14 didn't see any Plutonium in the urine. Over
15 time, the excretion peaked, and then
16 declined. And that's pretty unusual.

17 And the point that I think that we
18 want to make, is that this is a very unusual
19 exposure scenario. It's not common. It's
20 not even typical at other places like Mound,
21 for instance. Again, the vibration testing
22 generated the respirable particles. And

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1 there was certainly vibration testing done at
2 Mound. I mean, that is certainly true.

3 But the situation where this thing
4 was being destructively analyzed, in other
5 words, cut open, and workers were being
6 exposed to this material, is not typical at
7 Mound. So, we have looked at the 896, I
8 think, cases, as Joe mentioned. And we did
9 not see evidence of the type, solubility
10 class, solubility behavior that was observed
11 at LANL, in the Wing 9 incident.

12 Now, SC&A has referenced a paper
13 by Woods and Sheehan. And we have looked at
14 that too. And the data in that paper also
15 does not look like the type of material, the
16 type of solubility behavior that you saw at
17 Los Alamos.

18 There is, however, evidence in
19 that paper of non-monotonic excretion. In
20 other words, a slight increase followed by a
21 decrease, but it is not the same as was
22 observed at LANL. And Liz, you fact-check me

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1 here, but our other internal dosimetrist, Tom
2 LaBone, has looked at the particular cases
3 observed in that paper, and they're very well
4 modeled by standard ICRP models that we use.

5 So, I think that we're okay there.

6 I do think that it would -- this
7 issue would certainly benefit from further
8 analysis in terms of, we'll be issuing the
9 response to SC&A's report. We don't see
10 evidence of the Type J. That's what the LANL
11 material has been called. We still don't see
12 evidence of that at Mound.

13 We do see this kind of non-
14 monotonic behavior in the Woods' paper,
15 certainly. But we don't think that it
16 presents the same kind of a challenge that
17 the LANL material would present. Liz, would
18 you like to take it from there?

19 MS. BRACKETT: Yes. I would just
20 like to make one minor correction. It's not
21 necessarily accurate that we think we can
22 just use the standard type M and S. It's

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1 just the paper was written specifically to
2 address Type J. And that's what we feel was
3 not present at Mound.

4 What SC&A has called Type K, which
5 I think we need to change that, because we've
6 already used Type K for uranium aluminide
7 modeling. But --

8 MR. FITZGERALD: L?

9 MR. ULSH: We'll just take it --
10 (Laughter.)

11 MS. BRACKETT: We need to keep a
12 matrix of what we're calling these types.
13 But, we do agree that it does not behave as
14 the normal -- the standard type. But it
15 looks like Type K's, the initial dissolution
16 rate, where J is about 1,000 days for that
17 base locate initially, this other type, that
18 was seen at Mound is about 100 days before it
19 peaks. And so we do feel that that is not
20 that difficult to model. And it would
21 certainly be detected sooner than the
22 material that was seen at Los Alamos.

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1 And so we do feel that it can be
2 modeled adequately, maybe you know, with some
3 changes to the model. But not with the
4 difficulty that the Type J presents.

5 MR. FITZGERALD: Liz, this is Joe.

6 Does that present those confounding problems
7 on a practical level in terms of monitoring
8 the workplace by -- you know, again, I don't
9 know what bioassay frequency would have been
10 done for Pu, but monthly is what sticks in
11 mind. Is that right?

12 MS. BRACKETT: It's probably
13 quarterly or annually.

14 MR. FITZGERALD: Quarterly or
15 annually. And you know, I'm wondering if
16 there's any implications for you know,
17 picking up what I would call events or
18 instances, sort of acute exposure versus
19 chronic. That's usually a bugaboo, if you
20 have some of these situations.

21 MS. BRACKETT: Well, personally, I
22 don't think that it would present a problem

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1 because you're monitoring, routine
2 monitoring, is likely to be longer than when
3 you do the peak. We could look at the
4 variation it would present between, you know,
5 assuming the standard midpoint for an acute
6 intake, then look at doing it within the time
7 between samples to see how much of a
8 difference that makes for this particular
9 type.

10 Although, for most cases, we
11 assume a chronic intake. You know, if there
12 are no clear peaks in the data, and no
13 identified incident, and particularly for
14 people whose results are less than the
15 detection limit, we just assume a chronic
16 exposure. And there's no reason to assume
17 anything different for these people. You
18 know, because we're just looking at general
19 intakes on that.

20 It's just, you know, that's the
21 default. If we don't know anything else,
22 then we go with chronic. Because it can

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1 approximate several acute intakes. So, I
2 don't think this presents a problem.
3 Although, we can certainly look at that.

4 I believe that Tom might have done
5 some calculations for that already.
6 Unfortunately, he wasn't able to make it to
7 the call today. But I think that he started
8 looking at that already.

9 MS. LIPSZTEIN: Liz, let me
10 understand. So, you were recognizing that
11 there was exposure to this type, solubility
12 Type Plutonium-238 at Mound and that the
13 model currently can be -- you can model it,
14 and it's a different model than the Type J
15 that was presented for Los Alamos. Right?

16 And that, not only this accident,
17 what described at Sheehan, but there might be
18 other cases at Mound that had the same
19 behavior. And you have to look at the
20 urinary excretions and see what's the best
21 model for Mound. Is that it?

22 MS. BRACKETT: Yes, that's correct.

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1 MS. LIPSZTEIN: Okay. So, I think
2 we are on the same pages. I think what SC&A
3 would like NIOSH to show is how they are
4 going to recognize which people were exposed
5 to this special plutonium solubility type and
6 how it's going to be modeled, and to who it
7 is going to be applied, if it's possible to
8 recognize it.

9 MS. BRACKETT: Well, at this
10 point, initial thought on that, I think that
11 in many cases, since a lot of pre-trial
12 progress on the detection limit, for many
13 people, we would, at least for those cases,
14 propose that, given no other information,
15 that this would just be another model that we
16 would try for the person to see if it was --
17 if it resulted in a larger dose than M and S.

18 And so, it would just be another, another
19 type that we would try when evaluating a
20 case.

21 Certainly, if we had more data,
22 then we could try to do an evaluation of what

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1 it possibly was. But I think for many cases,
2 it would be just another option for the dose
3 reconstructor to try.

4 MS. LIPSZTEIN: And do you think
5 if there was an different kind of incident,
6 you could have another model, could have
7 several models and probably would have to
8 have a bounding model?

9 MS. BRACKETT: Well, do you mean
10 incidents where we have bioassay data, or --

11 MS. LIPSZTEIN: Yes, where you
12 have bioassay data and you didn't recognize
13 at first that it was exposure to this special
14 solubility type, but now you see that it
15 might -- that might have been exposure like
16 that?

17 MS. BECKETT: Yes. Well, in such
18 a case, we could use the data for the
19 individual to look at it. But -- is that
20 what you mean?

21 MS. LIPSZTEIN: Yes. Because
22 within, you know, I'm worried about this

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1 first -- okay. I understand that you would
2 look again at everybody, at every person, and
3 look at their possibility of exposure to this
4 special kind. And then see which has been
5 most great, and safest model; Type M, Type S,
6 or this special solubility K1, let's say.

7 But the problem is that, not for
8 every case, K1 would be applied, it stems
9 from the incident.

10 MS. BECKETT: Right. If there --
11 if the individual had enough data, that would
12 take -- make such determination, then
13 certainly, we would do so.

14 MR. FITZGERALD: Yes. I think in
15 general, I'm hearing, and correct me if I'm
16 wrong Brant, it sounds like Liz, what you're
17 saying, is you've moved to considering this
18 model, whatever letter you're going to assign
19 it, which has this -- which acknowledges it's
20 nonmonotonic behavior, that may involve 100-
21 day lag, rather than a sort of 1,000-day lag
22 that we had with the Los Alamos Type J.

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1 And you're going to look at, you
2 know, how that plays with the data that we
3 have, what are the implications. And I think
4 what Joyce is saying, there seems to be
5 implications of, where you know you have
6 different classes, you might have high-fired
7 that would presumably exhibit this.

8 I assume you would assign this to
9 all high-fired, or not? I don't know if
10 you've made that review or not. Have you?
11 Or, is that something that's still in the
12 air.

13 MR. ULSH: I think we probably
14 haven't made that review just yet. Certainly
15 what you said earlier about the plutonium
16 microsphere program, obviously that's the
17 type of a process where you might see that
18 kind of a thing. But I come back to once we
19 get to a point of agreement, where a model
20 has been proposed, and everyone buys off on
21 it, then the question of application of that
22 model is no longer -- it's not an SEC issue.

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1 It is a TBD issue.

2 At bottom line, I mean, if -- and
3 I'm, please understand, I'm not proposing
4 this, but it could be applied to everyone on
5 site. It's a question of an application.
6 It's not a question of can it be done. That
7 is a TBD issue.

8 MR. FITZGERALD: Well, this is a
9 good point. I think we raised this early on
10 with respect to the modeling and concept.
11 Remember that whole -- we kind of had that
12 early on as an issue, which meant that -- and
13 I think we said this from the get-go. That
14 we felt that conceptually a model could be
15 arrived at. And I remember you sort of
16 jumped in, well, it's all kind of, the SEC
17 issue is over.

18 Well, no, actually, we actually
19 felt that you had to demonstrate that on a
20 realistic or practical level, you can build
21 parameters, and you know, you can distinguish
22 who was exposed, and the things I think Joyce

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1 had mentioned. You know, be able to feed the
2 model, such that you could come up with dose
3 reconstructions. And I guess, maybe that's a
4 more generic question.

5 But you know, if one can come up
6 with a model, is that the end of the road?
7 Or is, does one have to demonstrate the model
8 can be applied? If it can't be applied,
9 because you don't -- you can't, say, figure
10 out who's actually subject to that model,
11 then that kind of defeats the purpose of the
12 model.

13 So, I guess from our standpoint,
14 it's yes, one needs to be able to come up
15 with a model. But demonstrating that it can
16 be used, and with sufficient accuracy, seems
17 to be the other test under the SEC that, you
18 know, if it can't be used, or you don't have
19 the parameters that would enable you to use
20 it, then I think that would fall short in
21 being an implementable model.

22 MR. ULSH: Well, I --

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1 MR. FITZGERALD: That's kind of
2 where I think what we're coming from.

3 MR. ULSH: Yes. We might be using
4 different terminology, talking about --
5 passed each other a little bit.

6 MR. FITZGERALD: Maybe.

7 MR. ULSH: When I say that we
8 reach a point where everyone agrees that the
9 model can be developed, a model has been
10 developed, and we've shown that it bounds the
11 types of behavior that you see at Mound, at
12 that point, then the SEC argument is over.

13 CHAIR BEACH: You still have to
14 connect the workers to that model.

15 MR. FITZGERALD: Right. That's
16 what he --

17 CHAIR BEACH: And I'm wondering
18 how that's going to happen.

19 MR. FITZGERALD: You use the model
20 to demonstrate -- to take a look at maybe
21 these 896 cases, or a subset of them, and
22 show that, with the models that are

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1 available, including Type K1, or
2 L --

3 CHAIR BEACH: K, L --

4 MR. FITZGERALD: -- or whatever
5 we're going to call it, and the standard ICRP
6 models, one of those models adequately bounds
7 those exposures. And perhaps, I mean, I
8 don't know, this is down the road, when we
9 look at you know, what kinds of processes
10 would generate this possibility of exposure
11 to this material, what time frames, that kind
12 of thing, that those kinds of things are TBD
13 questions.

14 Like I said, at bottom, if we get
15 to a point where we say, at worst, we could
16 apply this to everybody on site. Now, I
17 don't think that we would do that. Because
18 number 1, it's not going to be claimant-
19 favorable in all situations. But if we get
20 to a point where we say, at worst, that's as
21 big a circle as it could be.

22 Now, maybe we can narrow that

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1 circle. Maybe we can say, people who were
2 monitoring Plutonium-238, or during a
3 specific time period, or with these cancers
4 and these specific organs, it's possible that
5 that circle could be drawn tighter.

6 But once you find a point where
7 you've demonstrated that this model in
8 addition to the others, bounds the types of
9 behavior that you see at Mound, we're done
10 from an SEC perspective. Of course, all
11 those other issues, when you would apply
12 this, those are important issues. And
13 they're appropriately handled under the
14 context of the TBD issue, at least, that's
15 our position. It's for the Working Group to
16 decide that, though.

17 MR. MAURO: Can I throw a -- from
18 a precedent point of view, this is not unlike
19 the situation we encountered in the past when
20 we have a uranium exposure, and we have to
21 make -- well, are we talking about Type M or
22 Type S.

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1 And very often, NIOSH would say,
2 well, we're going to use the one that gives
3 the limiting dose. And the reason now,
4 that's certainly claimant-favorable. But
5 there's one little aspect to it that I think
6 is important to acknowledge. Is that there's
7 also this issue I keep running across, is a
8 plausibility.

9 That is, the SEC requirements also
10 say, not only be claimant-favorable, but you
11 need to be plausible. And the reason --

12 MR. MORRIS: And they are a member
13 of that cohort.

14 MR. MAURO: In other words --

15 MR. MORRIS: -- or any member of
16 the plausible for any member.

17 MR. MAURO: Right. So, for
18 example, when we were working with Chapman
19 Valve, there was some uncertainty regarding
20 whether we're dealing with S, or M or some
21 kind of mixture. And it became plausible
22 that any one of the exposures these people

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1 experienced is tough to tell. And it's not
2 out of the question, that what may be the
3 right way to deal with this is, when S is
4 limiting, that's what we'll use. When M is
5 limiting, that's what we'll use.

6 And it's certainly claimant-
7 favorable and plausible. Because the nature
8 of the material was such that you could not -
9 - you -- it was not -- it was plausible that
10 it could be either one of them. So, in that
11 way, it almost, fit the definition of
12 plausible.

13 Now, what they're doing is now
14 you're moving into this realm, and in this
15 realm we're saying, well they have different
16 names for it. Now, we're going to call it a
17 Type S, versus this other type. To me, it's
18 the same thing. But it's a new one because
19 ICRP doesn't really, maybe, talk too much
20 about it. But -- and you've come up with a
21 solution. Okay, let's agree that there are
22 certain biokinetics that we observe that seem

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1 to be, don't fit the nice little clean boxes
2 that ICRP creates for us all.

3 And we got a new box here, and we
4 want to give it a name. And also, we all
5 agree, that given the data that we do have,
6 sitting down, we can probably construct a
7 biokinetic treatment of this problem to model
8 that situation when we encounter it, for that
9 person. So therefore, unless we all walk
10 away and we agree, yes, we can do that
11 person. We've got enough data, and it
12 certainly has this lag, and we'll come up
13 with a model for that person. Okay.

14 Now, here's where I'm headed.
15 Where I'm headed now, is good, I think we've
16 got that locked. So now we have a coworker
17 model problem. The problem is, well, we have
18 people out there who are below the limits of
19 detection. We don't know quite for sure what
20 circumstances under which they might have
21 been exposed to the plutonium, and we're
22 confronted with the dilemma of whether we

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1 treat that person. Whether we -- you know,
2 let's say we have limited measurements, or no
3 measurements above the detection level. But
4 we do want to assign some missed dose to that
5 person.

6 And now what I'm hearing across
7 the table is, a good solution is, well, use
8 the one that's limiting. And that's very
9 much analogous to what was done in other
10 circumstances. Now, this is where the
11 plausibility issue comes in. And this is how
12 I see it.

13 If it's plausible that the nature
14 of the material that was being handled across
15 the board at this facility was such that it's
16 an unusual material, and it's possible that
17 many of the workers might have been exposed
18 to this unusual material, we're not sure. So
19 therefore, it's plausible that everyone might
20 have gotten that. It goes back to the
21 Chapman Valve again. We really don't know
22 because of the nature of the operation, the

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1 nature of the material, all of a sudden --
2 the argument I'm making is that, yes., if it
3 seems that it's plausible that that scenario
4 could in fact be the case at this facility,
5 then you could say, it becomes universal. We
6 will always pick the one that's limiting.

7 But, if it turns out that you
8 can't really say that, you say, well, no.
9 It's not like that. There's only a certain
10 class of workers that we believe were exposed
11 to this -- had this unusual pattern. And the
12 other classes of workers clearly were not.
13 Then we're in the SEC realm, in my opinion,
14 where we're going to have to parse the two.

15 We're going to have to be able to
16 say, each time you have a person that's on
17 the table, where you don't have clear and
18 unambiguous data, where by you can do dose
19 reconstruction either way, but you're saying,
20 we have to make a choice. What are we going
21 to assign to this person, which box are we
22 going to put it in? What I'm saying is, that

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1 automatically assigning into the limiting
2 box, will work if it's plausible that he
3 might belong in that box.

4 But if the nature of his work, you
5 know, if it turns out the nature of the work
6 is such that no, no, no, you should be able
7 to make that distinction. The nature of the
8 work was different enough, that you can say,
9 these people are going to be Type M, and
10 these people are going to be Type S, to
11 harken back to other situations where you did
12 make -- where you are sort of like forced to
13 make that distinction.

14 I guess, if you see where I'm
15 going, it almost is a question that goes to
16 the Working Group and the Board, about
17 plausibility. We're going to run into this
18 time and time again on future -- and now, the
19 question really becomes, what I'm hearing, is
20 you folks have proposed, given that the signs
21 could be dealt with, we'll come up with a
22 biokinetic model just like we did on Rocky.

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1 It can be done here, why not. Okay? And so,
2 in principle, yes.

3 Then the question becomes, on
4 Rocky, I think you were in a situation where
5 you could make a distinction between those
6 workers that you felt you want to treat with
7 high-fired, and those you decided no, we're
8 not going to treat with high-fired, or not.

9 MR. ULSH: Actually, Rocky, it was
10 --

11 MR. MAURO: It was everybody.

12 MR. ULSH: It was everybody. It
13 turned out not to be the claimant-favorable
14 choice sometimes. But it was, as a
15 possibility, it was applied to --

16 MR. MAURO: Okay. Well,
17 situation. So maybe it was, at Rocky, you
18 had a circumstance where you're saying where
19 you have all these workers, but you're going
20 to assign high-fired to all of them, even
21 though that may not have been limiting. And
22 not only that, it may not be the scenario

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1 that applies to that person.

2 MR. ULSH: No, no, no. It was at
3 Rocky, what we did was, we added that to
4 among the universe of possible solubility
5 classes.

6 MR. MAURO: Okay.

7 MR. ULSH: Of everybody.

8 MR. MAURO: Okay.

9 MR. ULSH: For some people, it
10 turned out to be the limiting choice.

11 MR. MAURO: Okay.

12 MR. ULSH: For others, it didn't.

13 MR. MAURO: Okay. And you made
14 that distinction.

15 MS. BRACKETT: In fact, that's
16 pretty much across the complex now. Once we
17 develop this super S, that's done at all the
18 sites.

19 MR. MAURO: Good. But now, that
20 brings us right where we are, the only reason
21 I bring this question up. And the reason I
22 bring it up is we're here again, only on

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1 Mound with a new type of material, with it's
2 own biokinetics. And it sounds to me that
3 once that model is agreed upon, which I
4 believe there's general agreement it can be
5 built, how are you going to parse it amongst
6 workers?

7 The universal approach may not be
8 the one that will be what I would say
9 consistent with the plausibility assigned it.

10 It's just a little too convenient. Okay, we
11 just give it to everybody. You know,
12 everybody's got the worst possible scenario.

13 I don't know if you can do that. And this
14 is really a judgment to be made by the
15 Working Group and the Board.

16 You know, because you found
17 universal solution that will bound everybody,
18 but if that circumstance does not apply to
19 everybody, is that consistent with the
20 plausibility side?

21 MR. MORRIS: But John, it doesn't
22 have to apply to everybody. It has to apply

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1 to any member of the proposed class.

2 MR. MAURO: Right.

3 MR. MORRIS: Not every member of
4 the proposed class. That's the definition of
5 --

6 MR. FITZGERALD: But it won't be
7 in the proposed class if it's successful. I
8 guess I'm missing something.

9 MR. MAURO: Maybe I'm not making
10 myself clear.

11 MEMBER ZIEMER: Well, the proposed
12 class can have any number of definitions. It
13 could be everybody on the site, or it could
14 be in a particular building, or a particular
15 class of -- that's going to be very dependent
16 on the definition of the class to start with.

17 But I don't think Brant was saying
18 you're going to apply it across the board in
19 a site, are you? You yourself define what
20 the class is.

21 MR. MAURO: Well, the initial
22 Mound -- initial proposed Mound class is

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1 everybody on site. Now, of course, as in the
2 past, the Advisory Board is free to, perhaps,
3 define a narrower class. I mean, that's
4 always a possibility. But right now, at
5 least the initial proposed class is everyone
6 on site.

7 John, where I'm perhaps a little
8 confused is, even at Rocky Flats, it may not
9 be possible to say that these particular
10 workers dealt with Super S Plutonium-239, and
11 these particular workers didn't. I certainly
12 think that it's not -- the people that were
13 actually exposed to that material is much
14 smaller than what we're applying it to.

15 MR. MAURO: See, if you know who
16 they are, I think you've got the problem
17 knocked. In other words, I know that the
18 people that were in the circumstance where
19 they were exposed to this unusual material,
20 we know who they are. And therefore, we know
21 when we're going to apply it.

22 I'm more concerned about not being

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1 able to do that.

2 MR. ULSH: But that's not what
3 we're doing at Rocky. We're putting that in
4 for everybody. I mean, there's precedent for
5 that. And as Liz said, it's not just Rocky.
6 It's pretty much across the complex.

7 MS. BRACKETT: In general, for
8 internal dosimetry, the way it works is that
9 we take the possible universe of material
10 types, identified by the ICRP, and we apply
11 all of them to every person. I mean, we
12 can't say with any certainty anywhere that
13 these people only work with Type M, and these
14 people only work with Type S. The dosing
15 conceptions are always done assuming all
16 possible material types.

17 MR. ULSH: Now, it may be at
18 Mound. Keep in mind, I'm getting ahead of
19 the cart, ahead of the horse here. I can't
20 really say where, if any, situations -- well,
21 certainly there are some situations at Mound.
22 I think that everyone one would agree where

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1 you see this nonmonotonic behavior. That
2 might be limited to a particular time.

3 For instance, when they started
4 the microsphere program. I'm just saying, a
5 for-instance here. I don't know that that's
6 the case. So, you might say for instance,
7 whenever that program started, I don't know
8 when it was, 1965, I don't know. Before that
9 time, it's not plausible. After that time,
10 it's plausible.

11 There may be situations like that.

12 MR. MAURO: You just answered my
13 question. There might be ways to parse this.

14 MR. ULSH: Perhaps.

15 MR. MAURO: And it depends on, I
16 guess, it's uncertain right now.

17 MR. ULSH: Perhaps. But of
18 course, that would be something that we would
19 all have to discuss, and you know, come to
20 consensus on, I guess.

21 But at worst, we're left with a
22 situation like at Rocky Flats, and everywhere

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1 else in the complex, where we say --

2 MR. MAURO: You can't parse it.

3 MR. ULSH: -- we can't parse it.

4 Just apply it to everybody.

5 MR. FITZGERALD: I guess my
6 question that sort of led into this
7 discussion was, whether that parsing was
8 going to be part of demonstrating the model,
9 or from the way you describe it, as part of
10 the non-SEC application part. And I'm still
11 not clear whether you would agree that the
12 kind of parsing that -- I'll use that word
13 that John's talking about -- would be part of
14 your demonstrating the model, how it would be
15 applied.

16 If it is, then my issue doesn't
17 play. If it isn't, then I still have some
18 questions about whether the model is going to
19 be truly demonstrated if you can't show how
20 you're going to distinguish workers.

21 MR. ULSH: Perhaps the way forward
22 would be, from here, let's wait and see how

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1 it all shakes out. If we wind up proposing,
2 you know, what, we're just going to apply it
3 to everybody, well, then that's one thing.

4 MR. FITZGERALD: Yes. Okay.

5 MR. ULSH: But if we come back and
6 we say, it's only these particular workers,
7 maybe then that would be the appropriate time
8 to have that discussion. Do we need to talk
9 about this now, before the SEC decision is
10 made? Or is that more appropriate for a TBD
11 discussion.

12 MR. FITZGERALD: Well, I think
13 that discussion can't be -- I mean, you've
14 had the response now for at least a week.
15 I'm just saying, it really is pretty early in
16 the process.

17 MR. ULSH: Yes, yes.

18 MR. FITZGERALD: But I think a
19 discussion can happen the next go around.

20 MR. MAURO: And talking it
21 through, and listening, I can see why we
22 would come to the decision it's not an SEC.

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1 Because what you're saying is, once you have
2 the model, then it becomes, okay, well, we're
3 really in one or two places.

4 Either if we really can't parse
5 it, that means that we really don't know who
6 really got this and who didn't get it, then
7 you have no choice but to apply it to
8 everybody. If you can parse it, you can
9 parse it. So, I guess I'm going to sort of
10 withdraw my little concern after my -- after
11 thinking it out loud, so-to-speak. I guess
12 my reaction now, in light of what you said is
13 that, yes, we're not really dealing with an
14 SEC issue.

15 MR. ULSH: Well, it's early.
16 Let's -- certainly I like that.

17 MR. MAURO: No, no, no. I'm just
18 trying to be thoughtfully honest about it.
19 Because my first reaction was, wait a minute.
20 You have an obligation to parse. But maybe
21 if you really can't parse it, I mean, just
22 about anybody could have gotten hit with this

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1 stuff.

2 MR. ULSH: Yes.

3 MR. MAURO: Then you really, like
4 everything else, like the uranium issue, then
5 you have no choice than to pick the worst one
6 for each person.

7 MS. LIPSZTEIN: I think that's why
8 we stop now, is that it has to be looked --
9 all the people that were exposed, that had
10 bioassay focus done, and see which ones would
11 have been exposed to this special Plutonium-
12 238 type, solubility type.

13 And how is NIOSH going to do it,
14 to distinguish which workers would have this
15 specific model, so that -- because I think we
16 are weighing that even exposure to this
17 special type of plutonium, depending on the
18 year, and on the circumstances, the model
19 could be different. So, you would have
20 different -- let's say, it's not -- what
21 makes the model different is the assumption
22 parameters. So, the assignment of the

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1 assumption parameters, to the different cases
2 and different years that the incidents might
3 have occurred.

4 So, what NIOSH has to demonstrate
5 now, is how it's going to, NIOSH is going to
6 distinguish who could have been exposed to
7 this special type of Plutonium-238, and which
8 model is the best one to be applied in each
9 kind of incident. And which incidents
10 occurred, and what shall be done if you have
11 insufficient data to determine which form of
12 the threat was involved.

13 And also, how to distinguish from
14 the bioassay data, what was Plutonium-238 and
15 what was Plutonium-239. And there are some
16 hints, if you go through the DOE files from
17 the workers, that might be some exposures to
18 the high fired Plutonium-239 also, which has
19 what -- like in Rocky Flats. So, it's
20 tricky to distinguish. I simply -- what I
21 would like to do is wait for NIOSH response
22 to tell us how they are going to distinguish

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1 who were exposed to this special kind of
2 Plutonium-238, how to distinguish from the
3 bioassay from the Plutonium-238 from
4 Plutonium-239, which different models are
5 plausible to apply with Mound, which is the
6 most claimant favorable, and what should be
7 done if you have insufficient data to
8 determine what kind of Plutonium is involved.

9 MR. ULSH: Joyce, I think we might
10 be shooting at the wrong target here. You're
11 focusing on the importance of picking Type K1
12 versus Type S. I'm focusing on looking at
13 the bioassay data that is available for a
14 particular claimant, and showing that using
15 some model, either the predefined ICRP
16 models, or this K1 model, that we can bound
17 the dose. I can't say whether it was really
18 perhaps K1 or Type S. But I can show at
19 least with one model, I can bound, I can come
20 up with a claimant favorable estimate of the
21 dose for that particular worker.

22 That's the end point that we have

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1 to show. I don't think --

2 MS. LIPSZTEIN: Yes. But there
3 might be a K1, K2, K3, K4, depending on the
4 case.

5 MR. MORRIS: Do you really think
6 there would be that many different models, or
7 do you think that's just --

8 MS. LIPSZTEIN: I don't know. I
9 don't know.

10 MR. MORRIS: -- individual
11 variability that's --

12 MS. LIPSZTEIN: I don't know. We
13 have to look at the data. I don't know.
14 It's clear --

15 MR. MORRIS: All I'm suggesting is
16 that that's --

17 MS. LIPSZTEIN: -- now -- it's
18 split judgment. I know that in different
19 times, probably there was exposure to this
20 special solubility type. Because we have the
21 incident described by Sheehan and Woods, and
22 then we have later, if you look at the DOE

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1 worker statement files, there's even some
2 notes saying that at a much later time,
3 saying that the results don't -- well, they
4 said for example, "His early data was lower
5 than later. And before he couldn't calculate
6 amount initial by the present to show the
7 early movement of material to be high
8 enough."

9 The same problem is found with
10 workers such and such. So, in several places
11 in the DOE files from the workers, there are
12 some notes pointing to this kind of exposure
13 in different times. So, I don't know if all
14 of them would fit the same model. But this
15 is something that has to be done. I'm not
16 saying maybe it fits the same model, maybe
17 not. I didn't try.

18 MR. FITZGERALD: I guess my
19 question would be, from what you and Liz have
20 said, you're going to look at the data. The
21 Sheehan paper, just for -- well, it's a
22 comment paper. It's one set of data. You're

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1 going to be looking at samples of 89, so
2 you're going to be looking at some of the
3 plots that we kind of sampled.

4 I mean, you're going to look for,
5 I would assume, not a series of so-called K
6 curves, but maybe a bounding K curve that
7 would best characterize the Mound behavior,
8 nonmonotonic behavior? I mean, certainly you
9 could come up with a series, but that would
10 seem to be inefficient and impractical. You
11 would try to come up with a bounding, I would
12 think. Is that kind of where you're headed?

13 MR. ULSH: Liz?

14 MS. BECKETT: Well, we do have all
15 of the Mound plutonium data. And I'm pretty
16 sure that we've identified cases there that
17 we could use to look at a model for those,
18 for those in the Sheehan paper. I'm thinking
19 that there are one or two other papers
20 published on Mound data but I'm not positive.

21 But, yes, we would look at that
22 whole sort of universe of data, not just

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1 looking at the Sheehan paper.

2 MR. FITZGERALD: And so you would
3 probably be looking to figure out what the
4 most conservative model or curve would be,
5 although, you could also, you know, identify
6 maybe sets of curves. But that would --
7 again, that would be a choice of what makes
8 the most sense in terms of the operations and
9 the cohorts involved.

10 But I think -- Joyce, is that what
11 you're kind of saying? That really, we don't
12 know, and I guess NIOSH doesn't know at this
13 point either? But that strategy is something
14 that I think Brant used, that that's what
15 we've got to come back with. It's after we
16 go through this, think about it, and what's
17 the best approach. And it may be one
18 bounding upper curve, or it might be a couple
19 curves. And it's hard to know at this point.

20 MR. ULSH: Yes. What I might
21 propose to do is, that once we finalize our
22 response to your report, do any additional

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1 data analysis that we talk about, and decide
2 we need to do, include that in there.
3 Perhaps this might be a topic that would
4 benefit from one of these technical calls,
5 you know, that happens in between Working
6 Group meetings.

7 MS. BECKETT: And getting Tom
8 involved would be very helpful. Because he's
9 more familiar with the data than I am at this
10 point.

11 MR. FITZGERALD: Yes. I think
12 that would be good timing, you know, whatever
13 time you need the model to have to get
14 together and talk.

15 MR. ULSH: Talk to my people and
16 find out.

17 MS. ROBERTSON-DEMERS: This is
18 Kathy Demers. I just wanted to bring up a
19 couple of things that you have to keep in
20 mind in developing this model.

21 You don't have to identify people
22 necessarily for the application of the model,

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1 but you are going to have to identify people
2 who were exposed to this material when you
3 develop that model?

4 MS. BECKETT: Yes.

5 MS. ROBERTSON-DEMERS: And another
6 thing that concerns me and this kind of adds
7 to what Joyce said about Plutonium-239, is
8 that this is gross alpha. This is not
9 Plutonium-238. And you have to take that
10 into consideration. Because you're getting
11 other actonides coming through.

12 MR. ULSH: Certainly, that's the
13 case, Kathy, where there is a reasonable
14 possibility that they were exposed to other
15 actonides. There were certainly limited
16 situations at Mound where there was work with
17 other actonides. But by and large, those
18 pale in scale to the work that was done with
19 Plutonium-238. And I think that if we
20 identify people who say, for instance, were
21 involved with the uranium program, or working
22 with the thorium redrumming effort, that

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1 would certainly be an issue where we might
2 want to consider not using those people.

3 But far and away, the biggest
4 mission was the Plutonium-238. So, I think
5 that -- I mean, the reason that they got away
6 with using gross alpha as opposed to a
7 isotope specific model, was because it was
8 fairly easy to differentiate if you see a
9 result, kind of you pretty much know what
10 material it's coming from.

11 But, I understand your point. I
12 mean, if someone is working with multiple
13 radionuclides, they may not be the best
14 person to pick to develop the model. That's
15 certainly true.

16 MS. ROBERTSON-DEMERS: And the
17 other difficulty is that because this stuff
18 is so insoluble, you're going to have a lower
19 excretion rate. And you may fall below the
20 MDA, and there may be a higher MDA that you
21 have to apply to the situation because of
22 that insolubility.

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1 MR. ULSH: Liz, do you have any
2 thoughts on that?

3 MS. BECKETT: No. Why would there
4 be a higher MDA?

5 MS. ROBERTSON-DEMERS: Because
6 it's showing up -- you're seeing less of this
7 type of plutonium in the urine than you're
8 seeing other types of plutonium.

9 MR. ULSH: Well, the MDA wouldn't
10 change that. It's the intake that you might
11 miss, might be.

12 MS. BECKETT: Right. But that
13 doesn't affect the MDA.

14 MR. MAURO: Yes. It's what you
15 got -- you've taken a urine sample, you don't
16 see anything.

17 MR. ULSH: Right.

18 MR. MAURO: And you know, if that
19 was above whatever, one becherel per
20 whatever, you would see it. Now, so you're
21 saying, okay, it's one-half that. We're
22 going to assume it's one-half, or whatever

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1 your standard protocol for assigning missed
2 dose. Then the question becomes, do we
3 assume that material that the person took in
4 that would have given that, is that this
5 high-fired stuff, or the regular stuff. And
6 that's -- and we're right back where we
7 started from.

8 And you were saying, hey, push
9 comes to shove, we just assign it the worst,
10 whatever the worst assumption is, we will
11 assign it to that person, depending on the
12 organ of interest. And I guess when I -- the
13 more I think about it, the more I think
14 again, my opinion is it Working Group? My
15 reaction is, that's not an SEC issue.
16 Because you're basically saying, we have a
17 way to bound it.

18 It's almost like to say -- in
19 fact, we are avoiding this a little bit,
20 Plutonium-239 versus 238. You might be in
21 the same circumstance. You could say, well,
22 we could do the same thing there. You know,

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1 push comes to shove, we just make the worst
2 assumption if you're looking at gross alpha.

3 I mean, we've done that with enrichment.

4 For example, at -- we'll be
5 talking about this at Fernald. We don't --
6 in some cases, we don't really know an
7 enrichment level of uranium people were
8 exposed to. It could have been anywhere from
9 natural up to perhaps two percent, perhaps a
10 size ten percent is some unusual
11 circumstance.

12 And some judgment was made, we'll
13 be discussing this matter, of what our
14 default assumption's going to be universally,
15 universally to everyone, of what the
16 enrichment level was. Same thing goes with
17 the recycled uranium. We're going to make
18 some universal judgment that everyone gets a
19 certain parts per billion of plutonium, even
20 though we know it's not true. But we're
21 going to make a certain judgment and apply it
22 universally from the beginning to the end.

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1 So, in effect, what we're dealing
2 with is a -- I guess a philosophy of dose
3 reconstruction that says that, when you're
4 really not sure, in other words, if you're
5 not really sure how you're going to parse it,
6 in other words, okay, what are the people
7 that got this unusual, what are the ones
8 where it didn't? And you what, when push
9 comes to shove, we have real trouble doing
10 that.

11 We're not quite sure. Especially,
12 when you're dealing with a bunch of people
13 that have low limits of protection, you don't
14 have curves for them, you don't know what to
15 assign to them in terms of what form they
16 might have been working with. What I'm
17 hearing is, well, the default of the case
18 that gives him the highest exposure.

19 That's almost like a universal
20 policy that's happening over and over again.

21 Would that be a fair representation of the
22 philosophy that's been adopted here?

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1 MR. ULSH: It's early.

2 MR. MAURO: Okay.

3 MR. ULSH: It may very well end up
4 being that. If we have strong reason to say
5 that this particular solubility type is not
6 an option for these particular situations,
7 and the example I used earlier was, if we
8 said it only happened in 1965 forward --

9 MR. MAURO: Sure, absolutely.

10 MR. ULSH: -- then we might say
11 it's not --

12 MR. MAURO: Sure.

13 MR. ULSH: -- for the earlier time
14 period. But I -- it's possible that we might
15 say, everybody across the whole complex. I
16 just don't know yet.

17 MR. MAURO: No, no.

18 MR. ULSH: I guess, across the
19 Mound facility, I just don't know yet.

20 MEMBER ZIEMER: A question to
21 either Brant or Liz, when you're doing your
22 modeling on this, do you have -- are you

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1 assuming a particle size distribution, or do
2 we have actual data? Is this mining for
3 microspheres?

4 MR. ULSH: Paul, I'm going to
5 speak, and then let Liz correct me, because
6 I'll probably go wrong. But my impression is
7 that when you're dealing from urinalysis
8 data, the particle size argument is really
9 irrelevant. It's only when you're trying to
10 go from air data. Liz, am I right, or am I
11 overstating it.

12 MS. BECKETT: I think it can
13 certainly make a difference on, depending on
14 what the range of possibilities is.

15 MR. ULSH: Okay.

16 MEMBER ZIEMER: I think if you
17 want to back calculate the organ doses, you
18 may need to know what that distribution was.
19 Liz, is that -- am I thinking about this
20 correctly? You get a certain output.

21 MS. BECKETT: Right.

22 MEMBER ZIEMER: Let's say you know

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1 that it's plutonium. And you have to
2 represent an organ dose for a given, if
3 you're reconstructing at least, you need to
4 know a distribution from the lung, which is
5 particle-size related.

6 MS. BECKETT: Yes. I think it
7 takes a pretty broad variation and particle
8 size before it actually makes much of a
9 difference. But I don't know how much data,
10 just off the top of my head. I was just
11 trying to quickly go through some of the
12 things that Tom wrote to see if he looked at
13 this at all.

14 MEMBER ZIEMER: Well, I was trying
15 to get a feel for Joe's point on the fumes.
16 Intuitively, you feel like that's a really
17 much different kind of particle size
18 distribution, although I don't know that. Do
19 you know?

20 MR. FITZGERALD: Well, I'm sort of
21 where you are, in the sense that fumes would
22 certainly, I think, challenge the fallout

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1 assumption of fine microns. But I --

2 MEMBER ZIEMER: Well, I don't know
3 that.

4 MR. MAURO: Change the submicron.

5 MR. FITZGERALD: We haven't seen -
6 - I haven't seen actual measurements of the
7 fumes. But I think in general, that's
8 understood. And again, I think that's an
9 implication, you know, in terms of that
10 operation.

11 MEMBER ZIEMER: Given output in
12 urine for that, if what you're saying is
13 true, it seems to me would look very
14 different than if you had the pretty big
15 particles and things were being swallowed and
16 taken back up the escalator and out the
17 stomach and --

18 MR. FITZGERALD: This would not
19 likely to be --

20 MEMBER ZIEMER: Yes.

21 MR. FITZGERALD: -- exhaled at the
22 chronic state.

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1 MS. ROBERTSON-DEMERS: Well, what
2 we do have is, we don't have the measurements
3 for fumes, but we do have some measurements
4 for Pu-238. And the range was 1 to 10
5 microns.

6 MEMBER ZIEMER: Air measurements?

7 MS. ROBERTSON-DEMERS: What they
8 did was, they took a cascading factor --

9 MEMBER ZIEMER: It seems to me
10 things would be very different than that.

11 MS. ROBERTSON-DEMERS: Yes.

12 MR. FITZGERALD: I'm not sure they
13 did in fact, you know, it depends upon what
14 time frame.

15 MS. ROBERTSON-DEMERS: Well, they
16 could --

17 MR. FITZGERALD: Because they used
18 a plasma torch a certain time frame, if they
19 didn't take the air samples then, it probably
20 wouldn't be included.

21 MS. ROBERTSON-DEMERS: Yes. They
22 were not doing that when these measurements

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1 were done.

2 MR. BISTLINE: Paul, this is Bob
3 Bistline, and at Rocky, I know the
4 differences between one micron and five
5 micron, I can always calculate it to be about
6 a factor of three difference in dose
7 calculation, because of particle size.

8 MS. BECKETT: But is that starting
9 from a bioassay result, or starting from an
10 intake? It makes a big difference.

11 MR. BISTLINE: That was taken from
12 an intake.

13 MS. BECKETT: Right. And we're
14 starting from bioassay. So, it's --

15 MEMBER ZIEMER: It may be less
16 than that.

17 MS. BECKETT: This whole project
18 has been a lesson in --

19 MEMBER ZIEMER: Yes.

20 MS. BECKETT: -- intuition.
21 Because I'm usually wrong when I try to think
22 it through without doing the calculations.

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1 MS. LIPSZTEIN: Yes, but you've
2 been starting from urine excretion and you
3 are calculating to go through the lungs, so
4 the particle size would make a difference.

5 MS. BECKETT: Well, for lung in
6 particular.

7 MS. LIPSZTEIN: Yes.

8 MS. BECKETT: But that's not
9 necessarily what we're --

10 MS. LIPSZTEIN: Yes, but in the
11 state of Plutonium-238 there would be, going
12 to be a large dose in the lung, that you are
13 going to calculate it again.

14 MS. BECKETT: And I thought, I was
15 looking at something earlier, and I thought
16 that there had been a study that said that
17 the particle size was five microns. But
18 maybe that was just an isolated incident.

19 MS. ROBERTSON-DEMERS: It was an
20 average. The range was 1 to 10.

21 MS. BECKETT: Okay.

22 MR. FITZGERALD: And that 1 to 10

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1 doesn't include the, necessarily some fumes
2 from that one operation.

3 MS. ROBERTSON-DEMERS: Yes. This
4 was for in the D&D era.

5 MR. BISTLINE: How about during
6 the, when they're actually processing?
7 Because in the process handler, they had
8 different particulate size of the 238.

9 MS. ROBERTSON-DEMERS: That's what
10 we don't have the data for. We haven't found
11 it. All we have is data for what was done in
12 the D&D era.

13 MR. BISTLINE: Okay.

14 MR. ULSH: I know that I have seen
15 data on particle sizes but I don't remember
16 the particulars, when and where and so I
17 can't really speak to how representative it
18 is. If this is an issue that is a concern,
19 we will take a look and see what kind of data
20 exists on particle size.

21 MR. FITZGERALD: Yes. I think the
22 way we left it when we first brought it up,

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1 was that would be part of what you would kind
2 of consider in terms of parameters for the
3 model. I don't know how that plays either.
4 But I think at Mound in particular given the
5 different ways the oxide was handled, the
6 different techniques, it seems like you have
7 a much broader range of particle size than
8 some other sites.

9 I think, I can think of fumes, it
10 would be submicron.

11 MEMBER ZIEMER: Yes. No, I --

12 MR. FITZGERALD: I don't know what
13 the implications dose-wise would be for that,
14 but certainly that would stretch it.

15 MEMBER ZIEMER: Well, I think as
16 they do the modeling, they could easily test
17 the model to see whether that made much
18 difference in the bottom line.

19 MR. FITZGERALD: Yes.

20 MEMBER CLAWSON: But, I'm sorry, I
21 don't want to show my ignorance here. You're
22 telling me that it is not an SEC issue?

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1 CHAIR BEACH: Not yet.

2 MEMBER CLAWSON: But if you can
3 demonstrate -- okay. That's what I was -- if
4 you can demonstrate the model. But if you
5 can't apply it to the people?

6 MR. ULSH: I think it's too early
7 to say that it is or is not an SEC issue.
8 Until we come back to the table with a
9 strategy for saying, we have a bounding
10 model, and then at that time, we might or
11 might not have to discuss to whom it is
12 applied.

13 MEMBER CLAWSON: Well, and this is
14 what I was trying to get a clarification.
15 Because you made a comment, and was very sure
16 that this is not an SEC issue, because we can
17 do this model. And if we can do the model,
18 that's great. But if we can't apply it for
19 the people, then?

20 MR. ULSH: Well, there were a
21 couple of preconditions there when I said
22 that.

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1 MEMBER CLAWSON: Right.

2 MR. ULSH: And that is, that we
3 come up with a model that can be added to the
4 universe of possible solubility classes,
5 where we can show that we can adequately
6 match the bioassay data from the people at
7 the site. Then it becomes -- and if we try
8 to say, that we're going to apply this
9 particular K1 model to a group of people that
10 is smaller than everyone on site, it's only
11 going to be limited to a smaller subset.

12 At that time, we might have to
13 have a discussion about okay, is this a TBD
14 or an SEC issue? But we're not there yet.

15 MEMBER CLAWSON: Okay. I just --
16 I was -- I'm just having a hard time getting
17 around that. I apologize.

18 MR. ULSH: No, that's fine.

19 MS. ROBERTSON-DEMERS: There was
20 two other things on this issue. The -- we
21 originally talked about when we brought up
22 the issue of high-fired oxide, one of them

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1 was high-fired uranium oxide. And as of
2 right now, we haven't found any data
3 indicating that it was present at Mound. And
4 unless we do, we're okay with closing that
5 issue.

6 And the other one was high-fired
7 thorium oxide. And we have decided to defer
8 that to the data adequacy write up.

9 MR. ULSH: So are you saying that
10 will come in under Issue 11?

11 MS. ROBERTSON-DEMERS: Yes.

12 MR. ULSH: Might I ask, when
13 you're talking about uranium, you said you
14 hadn't found any data yet. Are there other
15 places that you're planning to look? I mean,
16 where are you in terms of -- I mean, are you
17 still looking at the data?

18 MS. ROBERTSON-DEMERS: Well, if it
19 comes up, then we'll --

20 MR. FITZGERALD: I think, yes.
21 We, you know, we've been -- would be all at
22 the site probably three times.

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1 MR. ULSH: Yes.

2 MR. FITZGERALD: I think we
3 probably have done everything we can dig out
4 now. I think all we're saying is that unless
5 something presents itself, this is closed as
6 an issue for this particular item.

7 But we're leaving it open if
8 something does arise where there's some
9 evidence that you know, you both have the
10 high-fired process and the uranium present,
11 and that would be an implication. But I
12 guess in the big sphere of things, it just
13 wouldn't be anywhere near the magnitude of
14 the plutonium.

15 So, all we're saying is, in terms
16 of that issue, to close it out. We didn't
17 find anything. We think it's a legitimate
18 question, but you know, again, uranium did
19 exist at the site issue now, but we haven't
20 found that connection between high-fired
21 processes and uranium in terms of exposure
22 potentials. So, you know, we looked, got the

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1 data, looked for the data, but haven't found
2 anything that demonstrates that.

3 So, we're parking it, not pursuing
4 it any further unless something comes up that
5 would make the case. Thorium as an issue, I
6 think, is a broader question of just being
7 able to see it adequately in terms of
8 monitoring. I think that fits into 11.

9 MEMBER ZIEMER: I just want to
10 make my usual remark here. And guess what it
11 is? And that is, if that's an issue, and
12 there's some evidence that you see that there
13 is, I think it's NIOSH's job to pursue the
14 issue. It's not our contractor's job to be
15 looking for that information. It's fine to
16 keep your eyes open for it, you know.

17 MR. FITZGERALD: That's the
18 context.

19 MS. ROBERTSON-DEMERS: Yes, that's
20 --

21 MEMBER ZIEMER: But you know,
22 pulling the string, ultimately, goes back to

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1 NIOSH.

2 MR. FITZGERALD: Right.

3 MEMBER ZIEMER: If there's
4 indicators along the way that this is an
5 issue, then I think we want NIOSH to say,
6 this needs to be pursued. So the contractor
7 is not doing NIOSH's work.

8 MR. FITZGERALD: No. Just a
9 little history in context. When this came up
10 as part of the overall issue on Pu-238, we
11 said that certainly, there's a good
12 possibility other high-fired forms may be
13 involved. And I think Brant's response at
14 the time to paraphrase was, that we have seen
15 no evidence.

16 And our response to that was,
17 well, we're going out to Mound to do records
18 retrieval, and keep our eyes open. And if we
19 do find anything, we'll pursue this issue
20 further. This is sort of an acknowledgment
21 that no, we haven't found anything.

22 So, we're letting it go, unless

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1 something else comes up. So, no, we
2 certainly aren't doing extensive research.
3 But in the process of data capture, we were
4 kind of looking to see if there was any
5 uranium or thorium data in this context. We
6 didn't see any. So, this is more of a status
7 acknowledgment.

8 MR. MAURO: Before we move on, I
9 was -- I am thinking and troubled by this
10 question of parsing. And I gave you an idea,
11 it's a thought problem. Let's say we were
12 all -- we all worked at Mound, all of us,
13 okay? Same year. We all worked there. And
14 we also know that one of us, worked with this
15 special type of material, one of us. Not all
16 of us, just one of us, but we don't know who
17 it is.

18 Okay? Now, we're dealing with
19 this dose reconstruction. Well, if we don't
20 know who it is, well, we'll just assign it to
21 everybody. Okay? Is that -- does that meet
22 the threshold of plausibility and

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1 appropriate, as a strategy for dealing with
2 this class of problem? Since we know it was
3 one, but we don't know who it is, you
4 understand?

5 And I would say, my reaction would
6 be, no, that's not there.

7 MR. MORRIS: Well, my reaction is
8 yes.

9 MR. MAURO: But as it is the
10 question --

11 MR. MORRIS: In first fire, maybe
12 we should defer with a lawyer on our a staff
13 to answer the question. If I want to go back
14 to the definition, it's not -- it has to be
15 accurate for every member of the class. It
16 has to be for any member of the class. And
17 you know, I think you have to make a careful
18 read of that.

19 MR. MAURO: I agree. But I think
20 that in thinking of it that way, sort of a
21 crystalize the issue. In other words, and
22 that would be a judgment call, or a legal

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1 call. So right now, I don't know the answer
2 to that question. But I think that's the way
3 to think about it.

4 MR. MORRIS: I'm not sure, again,
5 that we might be using terms differently.
6 Under the scenario that you have set up,
7 where the data doesn't exist, or we don't
8 have the data that would let us say, John
9 Mauro was the guy that was exposed to this
10 material --

11 MR. MAURO: But we do have the
12 data that says, only one person was.

13 MR. MORRIS: Okay.

14 MR. MAURO: Because it was such a
15 small amount.

16 MR. MORRIS: Right.

17 MR. MAURO: You know, or such a
18 short period of time.

19 MR. MORRIS: And if we don't have
20 the data to draw a tighter circle than that,
21 to say, particular workers were, or were not,
22 in other words, we're saying it's plausible

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1 that anybody at the table could have been
2 exposed to that material. Then I think we're
3 obligated to not assign it but enter that as
4 one of the possible universe of solubility
5 classes that we would consider.

6 MR. MAURO: I can understand you
7 coming down that side. I'm not sure.

8 MR. MORRIS: And consequently, it
9 is plausible. And therefore, would meet the
10 definition.

11 MEMBER CLAWSON: Now you guys are
12 starting to get into my realm of it. You
13 could walk into the whole thing and say, I'm
14 going to give this much, and we'll throw it
15 to everybody now it's plausible. There's
16 also another little bit in there too about
17 accuracy and integrity of data. And that's
18 where I start to get into some of the
19 problems with this. And I understand where
20 you're going with this and so forth, but I
21 already have a hard time getting my hands
22 around it.

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1 Because of course, both, we're
2 sometimes on both sides of this whole issue.

3 But where does it come down to?

4 MR. MAURO: Where does it end?

5 MEMBER CLAWSON: Where does it
6 end, you know. And granted, when you read
7 the law on this thing and what they're
8 saying, I don't think that we're really
9 hitting on it. I think we're sometimes on
10 either side of it. And it's very vague to
11 me. And I hate, I hate documentation like
12 that.

13 But, what it comes down to is, the
14 plausible part of it, you could throw out a
15 number out there, and if I'm not mistaken,
16 you could throw it out there and say, hey,
17 that will take care of everything. Then it
18 gets back into the integrity, the data, and
19 everything else like that and if it really is
20 plausible for it. And we've had the
21 discussion on several sides, so.

22 MEMBER ZIEMER: Well, let me take

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1 the counter-argument. Throwing a number out
2 there is not the approach. What number is
3 used has to have some basis in reason and
4 science. And the accuracy part, you're
5 talking about an accurate decision on
6 compensation, which is different than an
7 accurate dose assignment to an individual.
8 You've have to be accurate in the decision to
9 compensate.

10 And that often means, if you want
11 to talk about individual accuracy, because of
12 this unknown factor, you have the ten people
13 John's talking about, you're going to be
14 inaccurate on nine of them scientifically
15 from a dose assignment point of view, but you
16 will be accurate as the law defines it, in
17 making the determination of eligibility for
18 compensation, which is what we need to be
19 accurate about.

20 Because actually, I think NIOSH
21 has shown that in general, the less -- often
22 the less we know about a person's dose,

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1 you're left with the less accurate, yes, the
2 more likely they are to be compensated
3 because of the fact that you have to assume
4 some possibilities for that. Now, that's not
5 always true across the board. But I've taken
6 the numbers with student groups and have them
7 plug it in. The less -- the bigger that
8 unknown distribution is, the more likely you
9 are to reach the POC level at 95 percent.

10 MR. STEWART: I just want to add
11 to that a little bit. When you have a very
12 detailed work history, and a lot of bioassay
13 data, then you are able to estimate an
14 accurate dose. Which, in our universe,
15 typically means a lower dose.

16 MEMBER ZIEMER: Now, because the
17 spread is tighter? That 95 percent count,
18 that interval doesn't move way out?

19 MR. MAURO: But to go back to lose
20 -- you use the word tension, it always
21 exists. I like to -- we have an interesting
22 tension. Because it is, we will all admit,

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1 that if we do know that it's only one person
2 that got the high dose in this room, but we
3 don't know who it is, and then we decide
4 within the context of the rule, it's
5 appropriate to apply that higher dose to
6 everyone.

7 But then I would take the next
8 step and say, however, we'd also agree that
9 it's not plausible that every single one in
10 the room got that does. So, there's the
11 tension. We have a dilemma.

12 MEMBER ZIEMER: I think we have to
13 look at it the other way. Is it plausible
14 that any one of them could have. Not that
15 all of them did. I think you got to ask how
16 you're saying plausibility. We don't know
17 which, is it plausible for you yet,
18 plausible for Ted yet. Okay?

19 MR. MAURO: That's good.

20 MR. KATZ: If I could just point
21 out, in the dose reconstruction rule, Part
22 82, it actually specifies as an example

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1 solubility that NIOSH would select. The most
2 claimant favorable solubility when there was
3 uncertainty about the solubility. So it
4 really, it's actually called out very
5 clearly, in those dose reconstruction rules
6 as an approach.

7 MEMBER ZIEMER: But the final
8 numbers that are derived, although they may
9 not be accurate, have a basis, not just a
10 number, that you know, let's pick a big
11 enough number and we can cover everybody.
12 It's got to be some rationale for it. And
13 we've had some arguments about what's
14 rational. I think sometimes that SC&A has
15 said that number is not only real high, but
16 it's not rational.

17 MR. MAURO: It's off the charts,
18 yes.

19 MEMBER ZIEMER: And sometimes it's
20 the other way around. I mean, maybe NIOSH's
21 number is not high enough, or something.

22 CHAIR BEACH: So, is there

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1 anything else on this issue we want to -- in
2 keeping with the agenda, it's break time.
3 So, 11:00, what time is it now? Is it 11:00
4 now? Okay, 11:15.

5 (Whereupon, the above-entitled
6 matter went off the record at 11:12 a.m. and
7 resumed at 11:14 a.m.)

8 MR. KATZ: This is the Mound Work
9 Group of the Advisory Board on Radiation
10 Worker Health. And we're about to get
11 started again following a short break.

12 CHAIR BEACH: Okay. Thank you,
13 Ted. Our next item is the SC&A Review
14 Summary Notes regarding exposure sources at
15 non-rad buildings at Mound. And I am going
16 to let Joe introduce this topic.

17 MR. FITZGERALD: Yes. Thank you,
18 Josie. Bob, are you -- Alvarez, are you on
19 the phone?

20 MR. ALVAREZ: Yes, I'm here.

21 MR. FITZGERALD: Okay. Where this
22 all came from, just a little background, is

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1 in the matrix, we identified a issue that we
2 tend to look at for each, SEC, which is the
3 degree to which there's a basis for assuming
4 that the most highly exposed workers were in
5 fact the ones that were badged.

6 And this stems from the -- in some
7 cases, I'm not saying this is the case with
8 Mound, but in some cases, in the early years,
9 that wasn't necessarily the case. And we do
10 want to examine that issue as a starting
11 point.

12 And in the case of Mound, I think
13 the issue was, we could not find a formal
14 basis for the badging policy. Again, I think
15 the statement or the assertion in the ER is
16 that the history, operational history at
17 Mound indicates that in fact the most exposed
18 were badged. And we wanted to see something
19 that was a firmer basis for that indication.

20 And I think the response that we
21 received early on, was that you know, the
22 contemporary accounts, how business was done

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1 in the early days, you know, the Meyer
2 reports, and whatnot, was wrongly suggested
3 that in fact, people were badged and that the
4 -- where you had radiological areas, that was
5 a requirement to go into those areas, was in
6 fact, to be badged.

7 And we looked at the
8 documentation, did not find any formal
9 policies, but did pick up on I think the same
10 operational perspective, that they did define
11 these radiological areas and were stringent
12 about requiring badging of people entering
13 those areas.

14 In this course of this discussion,
15 we indicated that we would keep our eyes open
16 in our records review to in fact, find any
17 policy, or any evidence that there was an
18 approach or a procedure of badging workers.
19 To date, we still have not found that. But
20 in the interim, I think the Working Group, I
21 forget where the suggestion came from, but
22 the Working Group suggested that SC&A review

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1 the available documentation to see if there
2 were any evidence, or any situations where
3 facilities considered to be
4 "nonradiological," did in fact get
5 -- were demonstrated later to have
6 contamination that may have exposed nonbadged
7 workers.

8 And that was the task that Bob
9 Alvarez took up, which was to look at the
10 available documentation to see if in fact
11 there were these so-called nonradiological
12 facilities in which nonbadged workers may
13 have been exposed to radiation, just as an
14 additional factor to look at on this
15 discussion.

16 So, Bob, do you want to explain?
17 Bob? MR. ALVAREZ: I'm still there. I
18 may have to move to the other ear here. Good
19 morning.

20 We were asked to take a look at
21 four different buildings: Buildings 48, 89 M
22 and DS. And these were considered to be non-

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1 nuclear buildings at the Mound Laboratory. A
2 preliminary review of various documents, and
3 I assume you have a copy of the firming notes
4 that I prepared, looked at these buildings to
5 determine whether or not there might have
6 been potential exposures to radiation going
7 on, either during the period of historic
8 operations or during the closure period.

9 Those -- I guess the most
10 significant and intriguing building is the DS
11 Building. This building was constructed in
12 the 1960s. It's about 47,810 square feet.
13 And it was known as the Development and
14 Standards Building. And it was not
15 considered to be a nuclear building and had
16 sort of carried out several functions. It
17 was "a complete standards laboratory for
18 measuring and calibrating the latest optical,
19 electrical, mass-dimensional and
20 environmental systems."

21 In the 1980s, the building was
22 involved in explosives component development

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1 standards and in the 1990s, almost all the DS
2 Building submissions ceased, with one
3 exception. And then later on, during the
4 closure period, probably beginning in the
5 mid-90s, the building was used for
6 administrative offices, change rooms,
7 clothing distribution, bioassay sample
8 collections, container distribution, a break
9 room, document storage, respirator training.

10 And it was considered to be, that
11 the deactivation's building would be
12 considered minimal because it did not handle
13 any radioactive material. The -- in looking
14 at this, what caught my attention was, in
15 1997 radiological survey of the Mound -- a
16 baseline survey of the Mound buildings, and
17 that this particular building had a
18 considerable amount of contamination from
19 removable tritium in 36 out of some 100
20 rooms.

21 I think there were more tritium
22 samples collected in this building than all

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1 the other rooms. Contamination was found on
2 furniture, in store cabinets, on equipment, a
3 computer monitor, floors, desks, drawers,
4 benches, trash cans, a door handle, and a
5 supply bin. And that one reading was as high
6 as 2.9 million DPM per 100 cubic meter of
7 allocation.

8 The survey indicated the DS
9 building had the largest number of removable
10 loose tritium examination surveyed, greater
11 than 1,000 DPMs, of all the buildings that
12 were a part of the survey. This included the
13 radioactive -- the nuclear building,
14 particularly the SW and the T building. It
15 also appeared to have the largest number of
16 tritium samples above the DOE control limit
17 for removable contamination, which is 10,000
18 DPM.

19 Now, how this -- how and when this
20 contamination came about is a mystery. And
21 there may be several explanations. I'm just
22 not sure. The DS Building was built directly

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1 atop of the T Building, which processed
2 significant amounts of radionuclides for
3 several decades, including tritium. And that
4 there, according to the structural process as
5 the history of the DS Building, there was a,
6 along the front of the building, a "high risk
7 line from the T Building extended from the
8 eastern and western sides of the building."
9 And that the southern face of the T Tower
10 formed to face an interior wall of the D
11 building. So, it was what it was.

12 The -- also in the late 1990s, the
13 T Building was involved in the unloading of
14 tritium bottles from 1995 until the late 90s.

15 So, there was some activity that went on
16 during the closure period there. There was
17 one sample that they -- they found a
18 Plutonium-238 sample on a cabinet that was
19 higher than the DOE control limit. And they
20 found the DS Building had three times as many
21 readings for total alpha contamination in
22 excess of 100 DPM than the T Building for

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1 example.

2 The Plutonium-238 was found about
3 30 times greater than DOE for essential
4 contamination where there were transuranics.

5 And in my memo, you see, that I took a look
6 at the number of samples. There were about
7 50 samples for loose tritium contamination
8 taken in the DS Building that were above
9 1,000 DPM. Only 32 samples were in the SW
10 building and six samples in the T building.

11 This -- there may be several
12 explanations for this. I just am not sure.
13 But as this is something which I, it was
14 suggested NIOSH take a closer look at. It's
15 possible that this building might have been
16 contaminated during the period of historic
17 operation. We don't know. It's possible it
18 may have been contaminated during the closure
19 period either by people tracking in
20 contamination or failure of the radcon
21 program. We don't know.

22 Although, I found that to be a

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1 hard one to accept because of the pervasive
2 contamination in so many rooms, and the high
3 levels of contamination in so many rooms that
4 were found. Or, it might have occurred in
5 the, during the closure period when the T
6 building was involved with processing tritium
7 bottles. We simply don't know.

8 And we don't know how many workers
9 worked in this building during its historic
10 operation, how many workers were in and out
11 of that building during the closure period.
12 Whether or not the workers were routinely
13 monitored or not, we don't know. During any
14 of these periods, I -- it's just a mystery;
15 this, in my opinion, perhaps the most
16 significant issue that needs to be looked at
17 by NIOSH relative to potential contamination
18 of non-nuclear building.

19 The second building was building
20 48. This was built in 1970, and it appears
21 that it did not handle or store any
22 radioactivity -- radioactive materials prior

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1 to 1999. And there might have been some
2 legacy contamination, associated with a waste
3 line break near the building, involving
4 polonium and cobalt-69 -- or cobalt-60,
5 rather.

6 A 1996 rad survey indicated radon
7 contamination where equipment was found. This
8 is prior to their having them -- the
9 contractors brought in radioactive material.

10 After 1999, when environmental health
11 physics sampling laboratories were
12 established there. Building 48 stored and
13 analyzed samples for plutonium, thorium,
14 uranium and tritium.

15 In 2001, there was an incident
16 involving tritium that affected several
17 rooms. Contamination samples were taken from
18 four drawers that ranged from 10,592 DPMS to
19 208,000 DPM. I looked at the non-
20 radiological characterizations. Their report
21 of 1997, and contamination was also found in
22 room, in an additional two rooms. A "high-

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1 direct alpha reading was found in a vent in
2 room 205," and according to surveys, a max of
3 total reading of 205 was 382 DPM alpha, and
4 500 -- something under 5,000 DPM beta.

5 Building 89 was built in 1985 and
6 served as a detonator storage building. The
7 1996 site life characterization noted that
8 readings in room 101 were described as radon.

9 According to the 1997 baseline
10 characterization, room 101 was maximum total
11 contamination from alpha and beta activity of
12 about 1657 to under 5,000 DPM respectively.

13 They found samples from a sink
14 that contained alpha activity, which the
15 survey indicated was "still contaminated due
16 to radon." A belt guard was found to have
17 3,000 DPM alpha. In March 2000, tritium
18 contamination was discovered in rooms 101 and
19 -- 119, I'm sorry, from the storage of
20 contaminated equipment in a storage cabinet.

21 And this incident was reported in accordance
22 to Price-Anderson.

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1 The M building, is one of the
2 earliest buildings. And it was --
3 construction was completed on this in January
4 of 1948, and several modifications were made
5 between 1960 and 1991. It was initially
6 known as the maintenance shop. And it did
7 lots of things over time, including machining
8 lathes, lithium processing, drill presses,
9 power presses, electroplating electronic
10 maintenance. They added an ES&H office in a
11 high bay area which was towards a crane
12 spanning the area.

13 According to a 1999 process and
14 structural study of the building, the
15 historical -- this report suggested that the
16 M building may have housed a power plant,
17 contaminating, high level spent fuel
18 reprocessing waste prior to disposal. But I
19 also discovered a 1952 directive from the
20 AEC, that suggested that this facility was to
21 be established in the semi-works building.
22 So, there's sort of contradictory information

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1 about whether or not that building was the
2 building that might have handled the,
3 essentially the high level radioactive waste
4 coming out of Oak Ridge and Hanford during
5 that period.

6 The machining operations in room
7 78, and 7-8, were originally implemented as
8 part of the polonium operating, and depleted
9 uranium were machined in room 7-8 -- 7 and 8.

10 The environmental permitting document filed
11 in the early 1990, suggested that uranium
12 machining was part of the activities included
13 in the M building. They were doing thermal
14 studies for RTGs in the high bay area. And
15 according to the 1997 baseline, radiological
16 characterization report, samples from the
17 high bay had maximum total alpha and beta
18 activity of somewhere under 100 to somewhere
19 -- to 5,000 DPM.

20 Leak contamination was found at
21 relatively low levels. And it appears that
22 the machining room, 7, 8 and 20, were not

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1 included in the survey.

2 In mid-1998, the wooden floor from
3 the high bay area of the M building was
4 removed because of radiological contamination
5 and I don't know the degree and extent of
6 contamination. It was just simply noted.
7 And on September 8, 2000, the building was
8 demolished.

9 So, this is sort of just a brief
10 look at this. It appears that the Working
11 Group should consider whether an assessment
12 is needed to determine one, the potential
13 exposure pathways during the operations of
14 the T and DS building; and b, if data is
15 sufficient to enable radiation dose
16 reconstruction for workers who might have
17 been exposed in buildings 48, 89, M and DS.

18 MR. MAURO: Bob, this is John
19 Mauro. Just one very quick question. When
20 you make reference to 100 or 5,000 DPM, I'm
21 assuming you mean 100 or 5,000 DPM per 100
22 centimeters square?

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1 MR. ALVAREZ: That's correct.

2 MR. MAURO: Okay. Thank you.

3 CHAIR BEACH: Anybody else on this
4 topic?

5 MR. BUCHANAN: Are those samples
6 fixed, or swiped?

7 MR. ALVAREZ: They were the, I
8 think the 1997 samples were swiped.

9 I mean, what I found interesting,
10 remarkable about the 1997 survey, was the
11 degree and extent they performed sampling in
12 the DS building. And I think their -- that
13 at least one of the contractors who was
14 bidding for the closure of the Mound site,
15 was concerned enough to ask some very pointed
16 questions about the relationship between the
17 DS building and the T building. And a lot of
18 this was discussed in the structural and
19 process history of this building.

20 MEMBER ZIEMER: I'm requesting,
21 Bob, this is Paul Ziemer. The reference to
22 radon contamination is a curious one. Is

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1 there any indication in the report that you
2 looked at, as how they went about identifying
3 -- I mean, radon is very short lived and it's
4 daughters are very short lived. So, what are
5 they looking at there?

6 MR. ALVAREZ: Well, I really don't
7 know, Paul, to tell you the truth. Because
8 I'm just simply, essentially reporting --

9 MEMBER ZIEMER: Yes.

10 MR. ALVAREZ: -- what was in these
11 documents, which do not sort of get into that
12 level of detail.

13 MEMBER ZIEMER: They don't give
14 the detail on how they identified
15 contamination as radon?

16 MR. ALVAREZ: I really don't know.
17 I just simply am reporting what was in the
18 document.

19 MEMBER ZIEMER: That doesn't makes
20 sense.

21 MR. MORRIS: You can easily cover
22 -- come back an hour later and make the same

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1 measure, and if it's not there, in a pure
2 context, decide that. I've seen that done in
3 operational health physics program.

4 MEMBER ZIEMER: Well, this is a
5 building survey done after the work was done.

6 I mean, it's
7 -- I don't know. It just seems a little
8 strange to me that someone could have
9 identified it.

10 MR. MORRIS: It happens all the
11 time on coolers, if they send shipping
12 samples back and forth, and I can tell you --

13 MEMBER ZIEMER: But that's an
14 active process where some -- if you're
15 accumulating something, and you take that
16 sample and count it, it's usually not a swipe
17 sample. Well, it could be, if it was an
18 active process.

19 MR. MORRIS: Sure. And in the D
20 of E reg, you would have had Coleman coolers
21 going back in the hundreds back and forth
22 from a sampling location. I just have seen

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1 that many times in my experience.

2 CHAIR BEACH: Won't you see those
3 decay?

4 MR. MORRIS: That's right. That's
5 why they say, it's the radon.

6 CHAIR BEACH: Well, in this
7 instance here, they're saying that --

8 MEMBER ZIEMER: Only if it -- only
9 if the generating source is there just before
10 you --

11 CHAIR BEACH: Right.

12 MEMBER ZIEMER: -- took it. I
13 mean --

14 MR. MORRIS: It's a static
15 electricity problem. It really is -- it's an
16 on-going operational detail of any kind of
17 program.

18 MR. MAURO: From my recollection,
19 the numbers that we were hearing, the 5,000,
20 the 100, it immediately brought to mind Reg
21 Guide I 1.86 in the DOE order, that goes
22 toward acceptable levels of clearance. It

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1 was basically the clearance standard. And
2 whenever you're going through D&D, at least
3 at one point in time, if you met that for
4 removable contamination, 100 for gross alpha,
5 which were presumed to be transuranics, along
6 with alpha emitters, 5,000 for gross beta
7 gamma, that meant you were okay.

8 Now, perhaps the radon we're
9 hearing is -- you would normally not include
10 that.

11 MR. MORRIS: Well, that was my
12 initial reaction, is that you brought that
13 up. And my reaction is, why would you even
14 think about putting that in the report log?

15 MR. MAURO: To get the short-lived
16 alphas out of there. Because you don't want
17 to leave the impression that the 100 DPM per
18 -- 100 DPM to 170 squared number was from
19 some long-lived radionuclides if in fact it
20 was from short-lived radon progeny.

21 My take on this is that it's a
22 negligible idea. That you -- you know, radon

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1 contamination at any level, if you decide
2 that that's what it is, it's just a problem
3 of being alive, you know. It's not an
4 operationally related problem.

5 MS. ROBERTSON-DEMERS: Well,
6 there's a possibility when radcon found a
7 sample of suspicious activity, they would
8 send it over to the environmental monitoring
9 group who would put it on a germanium
10 detector. So, there's a possibility that's
11 how they identified it.

12 MR. FITZGERALD: Josie, I want to
13 speak to the, sort of the broader implication
14 on this one. I mean, it's sort of why we
15 went through all of this.

16 You know, we interviewed a number
17 of workers, quite a few actually, between the
18 site profile and the SEC review, probably 30
19 or 40. And we came away with the same kind
20 of sense, I think, that NIOSH did. The
21 people we talked to felt that the badging
22 process at Mound was pretty tight. And you

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1 couldn't just walk into rad areas as a site-
2 wide maintenance person and not be badged.

3 Even if you were unbadged, you
4 would be badged when you entered a
5 radiological area. And that kind of put
6 forward though, the question of testing that
7 premise. Because it's suggested it was tight
8 enough that you didn't have to be concerned
9 with the non-badge people, because they
10 couldn't get exposed, essentially, and you
11 could assign them the ambient environmental
12 dose, and that would be fine.

13 So, this was kind of a test to see
14 based on the D&D data, because again, because
15 Mound was D&D'd and you know, went through
16 closure, you had a lot of characterization
17 that was done on these facilities. Quite
18 apart from what people remembered, they
19 actually went through and characterized each
20 one of -- each and every one of these
21 buildings.

22 And this data, I think, is what

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1 we're looking at now, saying, you know, were
2 there facilities that were understood to be
3 non-radiological facilities that were in
4 fact, you know, had some residual
5 contamination based on these baseline
6 reviews. And does that then suggest that,
7 you know, one, is this just exclusive to
8 these four facilities?

9 I think Brant, you're all looking
10 at the D&D data. And you know, there might
11 be more information about perhaps other
12 facilities that were deemed nonradiological,
13 and open to nonbadged people, but may in fact
14 have perhaps some identified contamination,
15 and some pathway to address how does one
16 handle then, exposure that may or may not
17 have been received by workers that might have
18 gone in there.

19 And I think for maybe, clearly,
20 there's one facility, the DS. It looks like
21 it might have been appreciable amounts that
22 there would be some accounting for that

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1 contribution perhaps, by people that might
2 have been in that facility. And I think
3 that's where that was headed. This is just a
4 first order, I think, testing of the
5 hypothesis that it was a pretty tight system
6 and people who were not monitored could not
7 really have been exposed to operation. This
8 seems to suggest there might have been some
9 contamination.

10 MR. ALVAREZ: I mean, the DS
11 building was the most intriguing because the
12 December 1997 baseline radiological survey of
13 all the buildings, including nuclear
14 buildings out there, the DS building appears
15 to have the most pervasive and significant
16 residual contamination from tritium of all
17 the buildings, including the SW, the T
18 buildings, the H buildings, the buildings
19 where they were handling, you know,
20 substantial amounts of radioactivity.

21 MR. ULSH: Okay. Again, I want to
22 start with kind of a larger context on this.

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1 This piece was presented in support or
2 related to issue number 17, which dealt with
3 badging policy. And at the last Working
4 Group meeting, as Joe stated, this was one of
5 those that SC&A had taken a look at. And it
6 was kind of headed towards, maybe this is not
7 an SEC issue, but keep the possibility open
8 while you look at other data.

9 So, I'm presuming that since this
10 piece came after that, this represents that
11 category of other data that might make us
12 say, hey, well, wait a minute, some more
13 looking needs to be done here.

14 MR. FITZGERALD: Yes. And again,
15 it's not dead-on the issue raised in that
16 particular item.

17 MR. ULSH: Well, that was -- this
18 is --

19 MR. FITZGERALD: It's more of a,
20 somebody, I think, at the last Work Group
21 session, maybe it was Mike Gibson, or
22 somebody, raised the thing saying that they

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1 were aware of exposures that may have taken
2 place. So, this is not a question of what's
3 the most exposed badge. This is a question
4 of -- and we got into this discussion in this
5 context, which was how tight was the system?

6 Because there was a, sort of a -- and we
7 agreed, because we heard it from the same
8 workers that you talked to, that it was a
9 tight system and people just could not go
10 into rad areas without getting badged.

11 So, this was, I think, the result
12 of that discussion that we got into, which
13 was, can one test a hypothesis. And I think
14 this is the first test that we did.

15 MR. ULSH: Well, any reaction that
16 -- we're holding our formal response to this.

17 Because of the 15 references, we have access
18 to 9, but there are 6 more that are in DOE's
19 hands for review. And so, we don't have
20 access to those six references at this point.

21 Once we do, we'll take a look at
22 those, and then incorporate anything that we

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1 find in our --

2 MR. FITZGERALD: They should be
3 forthcoming.

4 MR. ULSH: -- okay, in our
5 response.

6 But the first thing that kind of
7 confuses me about this particular piece, is
8 your conclusion that these are nonrad
9 buildings. We haven't seen anything that
10 characterizes them as nonrad buildings. In
11 fact, if you look at the Wayne King document,
12 which was, the purpose of which was to
13 provide some background characterization of
14 what went on in particular buildings, and
15 rooms in buildings, and what radionuclides
16 you might find there.

17 Clearly, there are radionuclides
18 that are listed in that documents in these
19 buildings.

20 MR. ALVAREZ: But not these
21 buildings. I mean, I went through that King
22 document. And the more enlightening

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1 documents are the structural process history
2 of these buildings. Which -- and also, the
3 other document which I think is important,
4 which is not in DOE's hands, is the 1993
5 physical characterization of the Mound
6 facilities, where they -- it made it clear
7 that these buildings were not nuclear
8 buildings.

9 CHAIR BEACH: Weren't these also
10 in the road map as nonrad buildings?

11 MR. ALVAREZ: Yes. I don't know
12 if they're on the road map, but I went
13 through that King document very carefully to
14 see, to try to find these buildings. And
15 they weren't -- they really weren't
16 referenced. And only when I found, went into
17 the sort of the individual histories of these
18 structures, that you find some of this stuff.

19 With the exception of the DS and M
20 building -- and by the way, the King report
21 does reference the M building. It doesn't
22 reference the other buildings. So, I stand

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1 corrected. But the DS building is not even
2 on the radar chart of screens
3 -- of the King building.

4 Now, attached to the King report,
5 is this 1997 baseline characterization
6 report, which has quite a bit of sampling
7 data about the DS building. But there's no
8 reference in the King report about the DS
9 building at all.

10 MR. ULSH: Well, I'll have to take
11 a closer look at it. And we'll include that
12 in our response to it. But the implication
13 seems to be that these were not
14 radiologically controlled areas. I don't
15 know that we're prepared to accept that,
16 either. And by implication, that workers,
17 unmonitored workers, could have gone into
18 these buildings. We've seen no evidence of
19 that. In fact --

20 MR. ALVAREZ: Well, I don't know
21 where the truth lies in that either, Brant.
22 I just know that this is what they were

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1 reported as being. And that several of these
2 -- at least two of these buildings, the DS,
3 48 and 89, were not considered to be handling
4 any radioactive materials.

5 MR. ULSH: Well, not at that time.

6 MR. ALVAREZ: Actually, during the
7 period of let's say, historic operations.
8 Buildings 48 and 89, were explicitly used to
9 handle radioactive materials during the
10 closure period. The M building did have --
11 handled radioactive material off and on, and
12 I'm not sure what exactly they did, other
13 than what's been reported. But the one that
14 really stands out here is the DS building.

15 MR. ULSH: Well, in order for this
16 to be an example of people with a significant
17 exposure potential, but missed exposure
18 potential, because they weren't badged, the
19 people would have to in fact be not badged.
20 And we don't find evidence that that's the
21 case.

22 MR. ALVAREZ: Well, it's not only

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1 not badged, but were there bioassays
2 performed. Because the contamination issue,
3 especially with DS building, appeared to be
4 mostly associated with loose tritium. And it
5 was quite pervasive, and in some cases,
6 significant.

7 MR. ULSH: Exactly. That was
8 going to be my point. Was that the
9 contamination levels that you've cited here,
10 while the numbers sound really big and scary,
11 they certainly are not sufficient to indicate
12 a need for external exposure monitoring.

13 MR. ALVAREZ: Well, they do
14 indicate a need for them to be cleaned up to
15 a level to meet DOE's clearance standards.

16 MR. ULSH: I agree. However, if
17 you look at ANSI/HPS N13.12-1999, and we'll
18 have that in our -- I'm sure you didn't quite
19 get that written down.

20 MR. ALVAREZ: No, no. I mean, we
21 certainly didn't sort of go, dig that deep
22 and this is a very preliminary paper.

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1 MR. ULSH: Yes. But if you look
2 at values of tritium and plutonium per 100
3 square centimeters, they give you an exposure
4 potential of one millirem per year. For
5 tritium, it's 600,000 dpm per 100 square
6 centimeters. And for plutonium, it's 600 dpm
7 per 100 square centimeters.

8 So, while the numbers that you
9 cited sound eye-popping, my point is that, by
10 and large, those contamination levels do not
11 indicate a need for external exposure
12 monitoring.

13 MR. RICH: Hi, Brant. This is
14 Bryce Rich. Can I make a couple comments?

15 MR. ULSH: Jump right in, Bryce.

16 MR. RICH: Number one, there are
17 two issues of the King document. The later
18 edition does include the DS building and the
19 other buildings as rad buildings. And as you
20 mentioned Bob, the survey, the closure
21 survey, it was performed in order to clearly
22 identify the conditions where they might have

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1 to segregate materials for disposal.

2 It's a little different survey.

3 And perhaps a good deal more than what would
4 normally be necessary for radiological
5 protection on a routine basis.

6 MR. ALVAREZ: I mean, I may be
7 wrong, but I recall the 2000 iteration of the
8 King report did not mention the DS building
9 as a rad building. Attendant to that DS --
10 to the King report, was the baseline survey.

11 MR. RICH: There's another issue.
12 We can get that for you.

13 MR. ULSH: Okay. Well, especially
14 the big numbers that you had questioned,
15 concerned about, were for tritium
16 contamination.

17 MR. ALVAREZ: And alpha
18 contamination as well.

19 MR. ULSH: Right. But my point is
20 that I don't know what type of dosimeters are
21 appropriate for tritium contamination,
22 because you don't get an external exposure

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1 from tritium.

2 MR. ALVAREZ: Well, I guess the
3 questions that arise here -- actually what at
4 issue here is not whether or not -- I guess
5 the first-order question, is not you know,
6 whether this is -- these contamination levels
7 are significant from a point of view of dose
8 reconstruction in and of themselves.

9 I think the first-order question
10 is, why did this contamination occur? And
11 did it occur historically, especially in the
12 DS building, during -- because -- from the
13 1960s to the 1990s or not? Where did this
14 contamination come from, I think is the
15 first-order question.

16 MR. ULSH: Well, I don't know that
17 I can answer that off the top of my head.
18 However, I think the important concerns,
19 since this is presented under Issue 17, are:
20 does this represent a situation where you
21 have unmonitored people being exposed to
22 having some significant exposure potential.

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1 And I don't see anything in here that
2 indicate that that's the case.

3 MR. FITZGERALD: Yes. But you
4 know, let's back up again.

5 MR. ALVAREZ: But this is just a
6 snapshot in time of 1997. That isn't to say
7 that you might not have significant exposures
8 historically, which may or may not been
9 picked up.

10 MR. FITZGERALD: I think -- you
11 know, I don't think there's any argument
12 about it. I think the question had come up
13 in the context of badging. And I think -- we
14 didn't pick these facilities. I think these
15 facilities were suggested. And I can't
16 recall who actually suggested them.

17 MR. ULSH: I don't know. It was
18 probably during a Working Group. Maybe it
19 happened off line, or maybe I just don't
20 remember.

21 MR. FITZGERALD: We were tasked
22 with looking at these four facilities in this

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1 context. And in terms of whether or not
2 these nonrad facilities, in fact, had
3 radiologically significant sources that would
4 be considered.

5 And I think that is a legitimate
6 question, as to whether or not one would, had
7 been badged, should have been badged, and
8 that gets to the heart of this particular
9 item anyway. And this only gets you half
10 way. It says that we've looked at these
11 facilities as directed by the Work Group.
12 And I think as Bob has indicated, we've found
13 some source terms that some of which may be
14 questionable, others would need to be
15 addressed from the standpoint of historically
16 were people exposed who were badged or not.

17 I think that's where it leaves it.

18 And I think the step we took was just simply
19 to look at the facilities from that
20 standpoint. So, I think we still have that
21 second question you're raising, which is
22 okay, so what? Should these people have been

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1 badged, were they badged? Were site-wide,
2 people going in, or were they in fact, as
3 people have said on and on, stopped at the
4 door and given a badge? I think there's
5 questions revolving around these specific
6 facilities that have to be asked.

7 MR. ULSH: Well, then, I would
8 remind you that during the D&D era, you know,
9 like certainly in 1997, the DOE, standing DOE
10 orders at the time were that badging was
11 required for, if you had exposure potential
12 of 100 millirem per year. And I don't see
13 anything in here that indicates an exposure
14 potential of 100 millirem per year.

15 Now, I mean, I'm not saying that
16 that's necessarily the end of the story, I
17 just don't see anything here that's a smoking
18 gun.

19 MR. STEWART: And just to magnify
20 that a little bit, if you were considering
21 potential exposure to tritium, your best bet
22 is bioassay because it is easy and

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1 inexpensive and very accurate. And if you
2 ran a tritium facility, you would not rely on
3 external dosimeters to give you any
4 information of what was going on.

5 MR. ULSH: That's right.

6 MR. STEWART: Also true if you
7 have an alpha contamination facility, you
8 know, that might argue that you had a source
9 in other parts of the facility. But alpha
10 contamination in and of itself is not
11 effectively measured by an external
12 dosimeter. So, you'd consider those program
13 aspects separately, bioassay versus external
14 dosimeters.

15 CHAIR BEACH: Well, in the D&D
16 era, did they bioassay? I always understood
17 they did not bioassay during that time
18 period.

19 MR. STEWART: There was bioassay
20 conducted.

21 CHAIR BEACH: During the D&D era?

22 MR. ULSH: Oh, yes, absolutely.

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1 MR. STEWART: Yes.

2 CHAIR BEACH: Was there?

3 MR. STEWART: Yes.

4 CHAIR BEACH: I read a report
5 somewhere that I thought it led me to believe
6 otherwise.

7 MR. STEWART: One of the other
8 issues is, was monitoring adequate during the
9 D&D era. That's one small possible universe.

10 MR. FITZGERALD: Well, I think you
11 know, certainly for DS, I understand what
12 you're saying, Brant, in terms of exposure
13 levels warranted monitoring, maybe
14 contaminated facilities, but DS, I would
15 think, we'd want to know to what extent
16 tritium bioassay was done in that facility,
17 just as it raises some questions about a
18 source term that may have been known. It may
19 have been that in fact, bioassays done in
20 that facility. But, I think that would be
21 the next question.

22 MR. ALVAREZ: Well, the DS

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1 building raises a question not just about
2 what I call the closure era there, because
3 D&D was on-going at the site, but rather the
4 closure period. But is, whether or not there
5 was contamination going on because of its
6 relationship to the T building historically,
7 and whether or not workers were being
8 monitored, whether it be for external or for
9 internal assimilation during that period.
10 And these are all unanswered questions.

11 MR. ULSH: Well, I think, okay. I
12 think perhaps the next steps in this issue
13 would be for us to respond to your report,
14 which we will do once we get the other six
15 references from DOE.

16 MR. ALVAREZ: Okay.

17 MR. ULSH: Assuming that that
18 happens relatively quickly, our response
19 should be in the Working Group's hand by the
20 next Working Group meeting. But this is the
21 kind of the issues that we're going to be
22 addressing.

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1 MR. FAUST: This is Leo. Can I
2 make a
3 -- jump in here, too, for just a second?

4 MR. KATZ: I'm sorry. Can you
5 identify yourself again, please?

6 MR. FAUST: This is Leo Faust.
7 The DS building actually was, handled all
8 kinds of radiological materials, mostly in
9 sealed form for calibration and
10 quantification purposes. The incoming
11 materials that came from Savannah River for
12 instance, were characterized in the DS
13 building, because it was a metrology facility
14 to start with. And they did find that they
15 had some residual contamination on the
16 shipping containers.

17 MR. ALVAREZ: Leo, were workers
18 badged and bioassayed in the DS building?

19 MR. FAUST: Well, every person on
20 the Mound site, as near as I can tell, was
21 bioassayed at least annually. And there is
22 some indication that all individuals on the

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1 site were issued a dosimeter, post about
2 1978, or `79.

3 MR. ULSH: That wouldn't have been
4 true after -- in the `90s, would it Leo? It
5 would only have been based on your exposure
6 potential, right?

7 MR. FAUST: I can't answer that
8 right off hand, but there is a letter that we
9 uncovered that indicated that, as of that
10 date, all personnel on site would be wearing
11 a dosimeter.

12 MR. FITZGERALD: That was `79,
13 Leo?

14 MR. FAUST: I believe so. Just a
15 moment. The letter is dated February 1987.
16 It supposedly goes into effect the following
17 quarter.

18 MR. ULSH: Leo, you can't see my
19 startled look here. Perhaps before we put
20 that out there, we should talk about it and
21 take a look at it. Because I would be very
22 suspicious that that might not be true during

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1 the D&D period. But we'll take a look.

2 MR. FITZGERALD: Well, again,
3 before we leave this issue, I think again,
4 this was a very specific tasking to check or
5 test the premise on these so-called non-rad
6 facilities. Now, if these non-rad
7 facilities, ostensibly non-rad facilities are
8 in fact considered rad and were handled that
9 way, I think the issue tends to go away.
10 But, again, we did the quick review and this
11 is what we found, and I think that
12 disposition isn't necessary at this point.

13 MR. MORRIS: One thing I'd like to
14 ask you to be careful of is nomenclature on
15 this. Because I heard non-nuclear, non-rad
16 and sort of interchangeably wording, you
17 know, making that definition. They're
18 significantly different definitions in some
19 eras, and non-nuclear facility is not
20 necessarily a non-radiological facility.

21 MR. FITZGERALD: I'm more
22 comfortable with non-rad. Nuclear gets into

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1 facility.

2 MR. MORRIS: I did hear Mr.
3 Alvarez say that.

4 MR. FITZGERALD: Right. It should
5 be non-radiological. And that's what we
6 have, I think, in the white paper.

7 MR. ULSH: Yes, you have non-rad.

8 CHAIR BEACH: Non-rad.

9 MR. FITZGERALD: And again, that
10 wasn't our handle. I think it was given to
11 us to look at these ostensibly non-
12 radiological facilities and to validate
13 whether there's any evidence of sources in
14 those buildings. And I think that's all we
15 were asked to do. And we didn't go any
16 further than that.

17 CHAIR BEACH: Well, our concern was
18 that they were non-rad buildings, therefore,
19 could workers be in those buildings non-
20 badged, which is part of this issue.

21 MR. ULSH: Could I ask a favor
22 from, I guess, Bob? If I missed it in the

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1 white paper, and you talk about the genesis
2 of that non-rad designator, could you just
3 perhaps, maybe you know offline, you know, in
4 an email or something, send that over to me,
5 or if it's in some supporting document or
6 something, just point it out to me?

7 Because you know, it may be that
8 we just haven't seen it. But we haven't seen
9 anything that indicates that non-rad
10 designator. So, if you have something, we
11 would like to see that.

12 MR. FITZGERALD: And you know, I
13 think we very purposely put non-rad in
14 quotations in the title of this piece.
15 Because it was sort of given to us in that
16 context that these were ostensibly non-rad.
17 I don't think we had a judgment as to that
18 classification at all.

19 MEMBER ZIEMER: And could you
20 clarify -- Bob, this is Ziemer again, clarify
21 whether that nomenclature includes counting
22 facilities. As I understand it, the DS was a

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1 -- the DS building was a counting facility or
2 a standards lab, which would mean that there
3 would have check sources and standard sources
4 and so on. If so, is that still a rad
5 building?

6 Because in most places, in fact,
7 if it's going to be used as that, if you have
8 any significant levels of contamination,
9 you've lost the use of the facility. If they
10 were able to use it up into the '90s as a
11 counting facility, then the tolerance for
12 contamination levels or significant sources
13 would have to have been very, very low, or
14 you couldn't use it as a standards facility.

15 If things are, quote, crapped up or if there
16 are significant external sources then, you
17 have a problem.

18 So, it's sort of inherently, it's
19 sort of makes the case for the fact that you
20 could not have significant sources. In many
21 facilities, you don't badge those people that
22 are handling little check sources in things

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1 that would never give you close to the 100
2 millirem. But I don't know. It appeared
3 from the narrative, that it had that status
4 at least up into the `90s.

5 Was there also an issue of whether
6 there was cross-contamination from tritium
7 releases on site which might have permeated
8 other facilities?

9 MR. FITZGERALD: Yes. I think the
10 implication which we can't run to ground, but
11 given the tritium observed and what as you're
12 saying, a check lab, its location above the
13 fill pond, the T building, there's that
14 implication that you know, is this a known
15 cross-contamination? Is it something that
16 was only picked up during the D&D process? I
17 -- you know, I would think you would have
18 picked that up during operations if there was
19 some fugitive tritium. I mean, that would be
20 something that they would look for, I would
21 think.

22 So, it raises more questions than

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1 it answers at this point. And you know, this
2 sort of just tees up the question for than
3 anything else.

4 MR. ULSH: Yes. The DS building
5 was built on top of the T building for
6 seismic stability. We haven't seen any
7 indication that there was any transport of
8 tritium between the two buildings. But like
9 Joe, I can't say one way or the other. It's
10 just that we haven't seen any evidence that
11 that occurred.

12 MR. FITZGERALD: I think the
13 premise of looking at that facility was, it
14 was known to be not a production-type
15 facility but as a metrology thing. And I
16 don't want to get hung up on this non-rad or
17 rad. Because I think it was given to us as -
18 - I just went back to the white paper and
19 just double-checked. It says, ostensibly not
20 rad, non-rad in quotations. So, we're not
21 labeling it that way. But that was the
22 premise that we looked at it to see whether

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1 or not there was any information.

2 MR. ULSH: And really, it's a
3 matter of semantics anyway. What we're
4 concerned about is, to work in that building,
5 were you monitored?

6 MR. FITZGERALD: Yes.

7 MR. ULSH: That's really what
8 we're talking about there.

9 MR. FITZGERALD: Yes. And I would
10 -- and the underlying question is, was
11 tritium known or unknown. And if tritium was
12 known, was it bioassayed. Just some basic
13 questions, I think, that would add to that.

14 CHAIR BEACH: Anyone else?

15 MR. FITZGERALD: And in Paul's
16 context, we didn't want to go any further
17 than that.

18 CHAIR BEACH: Okay. So, are we
19 finished with this item? Action is to
20 respond to SC&A's report and the agenda says
21 it's lunch time. So, break for lunch until
22 1:00 o'clock. Are we right close?

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1 MR. KATZ: Yes, it's noon right
2 now.

3 CHAIR BEACH: Okay.

4 (Whereupon, the above-entitled
5 matter went off the record at 12:01 p.m. and
6 resumed at 1:01 p.m.)

7 MR. KATZ: Hello. This is Ted Katz
8 the DFO for the Mound Work Group of the
9 Advisory Board on Radiation Worker Health.
10 And we are just coming back after a lunch
11 break. I do want to check to make certain we
12 have Phil still back on the line, from the
13 board.

14 MEMBER SCHOFIELD: I'm back on.

15 MR. KATZ: Okay. And then, we're
16 not going to run through the roster again.
17 But you can begin.

18 CHAIR BEACH: Okay. Thank you.
19 Before we begin, I want to go back to the
20 last issue, the Wayne King document. I know
21 it was briefly mentioned that there's a new
22 2000 version. If I am correct, I heard that

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1 from --

2 MR. ULSH: Yes, I heard that too.

3 MR. ALVAREZ: There's an Issue 3

4 that -- this is Bob Alvarez, I'm sorry.

5 There's an Issue 3 that was reviewed and

6 approved by TD Morris on 3/22/01, and it was

7 issued -- was authorized for use in July

8 31st, 2000.

9 CHAIR BEACH: Okay. So is that

10 available to everyone?

11 MR. ALVAREZ: I assume so. I'm

12 not sure.

13 MR. ULSH: I will -- we will check

14 and make sure that it's in the SRDB and if

15 so, we'll let you know the number, the SRDB

16 number.

17 CHAIR BEACH: Okay.

18 MR. ULSH: And if not, we'll give

19 that back.

20 CHAIR BEACH: So, you'll take that

21 on to email?

22 MR. ALVAREZ: It's the same

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1 reference number, except it's called Issue 3.

2 MEMBER CLAWSON: Is this the one
3 Bryce was referring to?

4 MR. ALVAREZ: I don't know. But I
5 went -- perhaps. But I went through this
6 over lunch time, and could not find any
7 references whatsoever to the DS building.

8 MEMBER CLAWSON: But you can
9 follow up with Bryce, make sure we're on the
10 same page of which one?

11 MR. ALVAREZ: Sure.

12 CHAIR BEACH: Thank you.

13 MR. ULSH: Bob, I think, that's my
14 action item. I'll take care of that and let
15 you guys know.

16 MR. ALVAREZ: Okay. Thanks.

17 CHAIR BEACH: Okay. So the next
18 on our agenda is, the SC&A Draft Preliminary
19 review of Price-Anderson Issue 21. Does
20 everybody have that, copy of that available?
21 Everybody here? Are you going to start that
22 also, Joe?

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1 MR. FITZGERALD: Yes. Let me
2 start that off.

3 I guess starting in the beginning
4 there were several issues raised by the
5 Price-Anderson Act violations that were
6 levied on Mound back in the mid, it might be
7 '97, but mid-90s, basically. And these spoke
8 to deficiencies of bioassay, the management
9 and administration of bioassay program and
10 the way it was administered in terms of the
11 decision levels, MDAs, pretty much across the
12 board.

13 So there was some pretty serious
14 issues which they received penalty for. And
15 the implication for the Work Group was to
16 ascertain how NIOSH intended to address those
17 issues which pertain to dose reconstruction.

18 And a white paper was developed, that
19 brought the worker through a number of the
20 RWPs, and I think it was your request, as to
21 SC&A's view, review of that white paper and
22 those findings.

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1 And I think at the time, we said,
2 well, it would be difficult without doing
3 some sampling to give you that answer. And I
4 think the Work Group wanted SC&A to pose an
5 approach. And the approach we took was
6 basically to walk through, since SC&A -- I'm
7 sorry, since NIOSH had gone through all of
8 the actions, to actually walk through all the
9 RWPs involved and to draw our own conclusions
10 about the implications for dose
11 reconstruction.

12 And this paper is really the, more
13 or less the results of that review. And
14 there's a matrix in the back in particular
15 which goes item by item. And what you'll see
16 there, is that by and large, we're in
17 agreement with the NIOSH conclusion about
18 these not being SEC issues, without going
19 through a lot of detail.

20 A lot of these are really
21 programs, management questions that speak to
22 compliance in conformance with required

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1 practice by DOE, but not to issues that would
2 preclude dose reconstruction. So we were in
3 concurrence with that understanding. As I
4 recall, there were a couple of issues that
5 NIOSH was doing further investigation, so we
6 kind of let that go as such, and are waiting
7 that -- those determinations.

8 And four of the issues got to a
9 more generic question of follow-up
10 monitoring, where you had relatively short-
11 lived nuclides, and whether or not bioassays
12 were done in a timely manner. And we felt
13 that really was less a issue -- a specific
14 issue in the context of Price-Anderson and
15 this particular instance, and more germane to
16 this broader review that we're doing of the
17 adequacy of internal monitoring.

18 So, when we say, Issue 11, I think
19 we have said Issue 11 in a couple of cases,
20 we're just saying, you know, that's a broader
21 question that we're addressing and we'll have
22 white paper for in you know, two or three

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1 weeks tops. And that's where we want to
2 treat those issues of, you know, the
3 implications for dose reconstruction, if in
4 fact, follow-up monitoring bioassay wasn't
5 done in a timely manner, and how that might
6 affect the feasibility of dose
7 reconstruction.

8 So, the matrix is really a
9 scorecard going through systematically, as
10 NIOSH has already done as well, in showing
11 where clearly in concurrence where they still
12 have work to do, and where we think, you
13 know, this is a broader issue that we're
14 going to treat in this upcoming white paper.

15 And that's pretty much it. I mean, I don't
16 think -- I think the details are there. If
17 there's any questions, Brant, you -- any
18 clarifications, we can go through that. But
19 I think it's self-explanatory.

20 CHAIR BEACH: Go ahead.

21 MR. ULSH: Okay. Joe, you
22 mentioned our original white paper that we

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1 sent over in advance of the previous Working
2 Group meeting. I wonder if, though, you
3 considered the followup document that we also
4 submitted?

5 MS. ROBERTSON-DEMERS: Yes, we
6 did.

7 MR. ULSH: Okay. Gene, are you on
8 the line?

9 MR. ROLLINS: Yes, I am.

10 MR. ULSH: It seemed like some of
11 the issues that you raise as being
12 outstanding were discussed in Gene's
13 followup. And Gene, I'll kind of let you
14 take it from here, and kind of walk us
15 through that if you would.

16 MR. ROLLINS: The two open items
17 are for the 15 unanalyzed Actinium-227
18 samples discovered in August of 2001. And
19 I'll discuss that, but let me mention a
20 second item. Other workers who entered the
21 WD building on February 12th, 1998, when that
22 building should have been posted for full-

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1 face respirators, while the ventilation was
2 shut down for the filter change, and that one
3 was addressed in a lot of detail in a follow-
4 up document, which I don't think you are --
5 SC&A is taking into account.

6 MR. ULSH: Well, that's the
7 Attachment A, right, Gene?

8 MR. ROLLINS: That's the separate
9 -- the WD building was a separate paper. The
10 summary I provided was dated the 28th of
11 July. I think you sent that to the Board, or
12 Working Group.

13 MR. ULSH: Boy, I hope so. I got
14 one here that I sent over on August 21st,
15 requested follow-up investigation, regarding
16 the RWPs affected by the Price-Anderson Act
17 violations at Mound. Well, Gene, walk us
18 through it. And I'll get together with SC&A
19 here at the meeting and make sure that they
20 have received all of the documents on this
21 issue that we have produced. I think so, but
22 --

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1 MR. ROLLINS: Yes. The second one
2 was the analysis, was, I titled it, An
3 Analysis of The Other Workers Who Entered the
4 WD Building When its Ventilation Was Shut
5 Down and It Was Not Posted for Full-Face
6 Respirator Use as Required. Short title.

7 MR. ULSH: Okay, Gene --

8 MR. ROLLINS: Yes. That should
9 have been provided to everyone.

10 MR. ULSH: You know what, that --
11 I'm going to have to take that one. That
12 might be something that I didn't get to you
13 guys. I'll have to check. But can you walk
14 us through the big picture on that?

15 MR. ROLLINS: Okay. Let me start
16 with that one. Basically the situation was
17 that the Price-Anderson finding found work
18 control issues with seven folks who did work
19 on this filter change, and that their work
20 did not properly control and so forth. I
21 think SC&A has agreed that those people, you
22 know, we pointed out the RWP. We know who

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1 those seven people were. We know what their
2 follow-up bioassay was and so forth.

3 And so the issue was with the fact
4 that the Price-Anderson documentation also
5 indicated that the building should have been
6 posted for full-face respirators during the
7 period. And I think it was a period of maybe
8 four hours. We have the sign-in dates and
9 sign-out dates on the RWP. So, we know about
10 how long the ventilation was shut down.

11 Anyway, there were seven
12 additional workers. So, we know it's in both
13 cases, there's seven. That's not a -- that
14 just happens to be a coincidence. There were
15 seven other workers not involved in this job,
16 who signed in on a general RWP on that same
17 day. The RWP number was LW-015-098. This
18 was February 12th, 1998. So we know who the
19 other workers, the other workers were.

20 And this is a, you know, a general
21 RWP. I think most people are probably
22 familiar with what those are used for.

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1 Anytime you enter a building to do sort of
2 routine sorts of things that are not
3 invasive, and so forth, like it might involve
4 checking a gauge, or some sort of routine
5 maintenance type of thing.

6 So, we have seven folks, as I
7 mentioned, who signed in on an RWP on the
8 date that work was done. So then we went and
9 looked at, well, what bioassay did these
10 folks have. And so, I looked in the MESH
11 database for follow-up bioassays for the same
12 radionuclides that were covered in the RWP
13 for the invasive work, in other words, the
14 actual changing of the filter. And to
15 briefly summarize, and this is -- you'll get
16 all this detail when you receive the full
17 paper, but four of the seven workers on the
18 general RWP did not have any results above
19 the decisional level. I think I went out
20 for, and looked for the next 12 months for
21 those same radionuclides.

22 Two workers had one thorium-228

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1 above decision level, and the last worker
2 showed Plutonium-238 and as well as thorium
3 isotopes above the decision level. So, the
4 question is, those are -- those positives are
5 both rather long-lived, well-retained
6 radionuclides.

7 So, we then looked at what the
8 bioassay history was for these workers. And
9 found that in all cases, the folks who showed
10 above-decisional workers, above-decisional
11 results, for the same isotopes, did have a
12 history of having positive results for those
13 isotopes. So, it looks like that would be
14 consistent with what their previous bioassay
15 history had been.

16 And as I mentioned before, four of
17 seven did not have any positives in bioassays
18 that were taken after this event. So, from
19 that we conclude that we know who the folks
20 were who entered the building on that same
21 day when it was posted. And I think I forgot
22 to mention that the general RWP would not

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1 have required full-face respirators or in
2 fact, it would not have required post-job
3 bioassays. It's just sort of a general thing
4 that stays open for about a year, in most
5 cases.

6 So, I think we know who the folks
7 are, and we know the follow-up history.

8 MR. ULSH: I would propose as a
9 follow-up, that I will go back and double-
10 check and make sure that there are no
11 documents in my inbox that need to go over to
12 you all. If there are, I'll make sure to get
13 that over to you perhaps we can discuss that
14 at the next Working Group meeting. And then
15 we will await your white paper on Issue 11.

16 MR. FITZGERALD: Yes, which should
17 catch up with all this, too.

18 MR. ROLLINS: Okay. If there are
19 no questions or anything on that part, I can
20 talk briefly about the 15 unanalyzed Actinium
21 samples.

22 CHAIR BEACH: That's -- I don't

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1 have any questions.

2 MR. ULSH: Go ahead, Gene.

3 MR. ROLLINS: Okay. On the 15
4 unanalyzed Actinium samples discovered in
5 August of 2000, you may recall that these
6 were mixed in with other backup sample --
7 with backup samples of an earlier incident.
8 And they were thought to be a part of these
9 backup samples, but it turned out they were
10 not in fact. They should have been analyzed,
11 and they were not being -- should not have
12 been held for backup purposes.

13 Eleven of the 15 people did not
14 have any Actinium-227 samples collected after
15 the date of the samples in the refrigerators
16 and the date of discovery. So that would
17 leave four that did, in fact. We could find
18 no documentation, or haven't found any
19 documentation as of this point listing
20 exactly who these folks were.

21 In other words, the following list
22 was involved. But I did search the MESH

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1 database in a number of different ways
2 looking for how one might conclude who these
3 folks were. And the best thing I've come up
4 with so far, was using the fact that the
5 Price-Anderson documentation indicates that
6 the follow-up actions were taken and closed
7 out, essentially the next day. In other
8 words, they restricted the workers, and
9 requested samples.

10 I can find in the MESH tables 14
11 Actinium samples that were scheduled on the
12 1st of August, which is the date of this
13 discovery. And there are no other Actinium
14 samples scheduled between July 24th and
15 August 7th. So, about a week window either
16 way from this event. And the number is about
17 right. So, this seems like a likely group of
18 people. But I can't find anything in the
19 MESH data that, you know, gives a code or a
20 reason why these samples were taken that
21 would tie all these together.

22 So, I've provided a list of names

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1 to Brant, and I believe he's going to
2 followup on those.

3 MR. ULSH: Yes. I want to make
4 sure we've got the right people. On this
5 issue, surprisingly, at least, it's a
6 surprise to me how difficult it's been to
7 find out who -- exactly who these people are.

8
9 As Gene mentioned, we've got this
10 list of putative people, but quite frankly,
11 I'd like to throw it out to SC&A and ask
12 whether in your discussion with former
13 workers, if you can think of someone who
14 could perhaps help us identify who these
15 people are. I'm thinking about talking to
16 Mike Gibson.

17 MR. FITZGERALD: That would be my
18 first impression.

19 CHAIR BEACH: Yes.

20 MR. ULSH: And if you all can
21 think of any other people that might be
22 intimately involved with this, and would know

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1 who their fellow workers were, that were
2 affected by this, we would appreciate
3 anything that you could provide too.

4 MR. FITZGERALD: I would start
5 with Mike, and then maybe he would know other
6 people that would help on that.

7 MR. ULSH: Yes. And we can run
8 this list of 14 people by him and see if that
9 sounds like the right group. But it's been
10 surprisingly difficult to figure out who
11 these people are. I figured it would be
12 pretty easy.

13 MR. FITZGERALD: It's not ancient
14 history, either.

15 MR. ULSH: No, no. It isn't. I
16 think part of the problem is that when DOE
17 requested a report on this issue, they
18 specifically requested that the names not be
19 included for Privacy Act, obviously. You
20 know, that causes us a little problem when
21 we're trying to back track and figure out who
22 it is.

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1 So, we'll check with Mike, and you
2 know, I bet that list was in -- and see if he
3 can provide any insights on that.

4 MR. FITZGERALD: And we found a
5 lot of files in the data capture that we did
6 with ORAU, that spoke -- and there was a
7 whole box in this Price-Anderson Act
8 violations. I don't recall seeing that list,
9 per se, but that would -- it could be a
10 resource as well, I think.

11 MR. ULSH: Yes.

12 MR. FITZGERALD: Internal records
13 would have names.

14 MR. ULSH: We looked through 2,000
15 or so pages of material.

16 MR. FITZGERALD: Yes. There's a
17 lot.

18 MR. ULSH: And that didn't provide
19 an answer to us.

20 MR. FITZGERALD: Yes. I didn't
21 recall seeing it.

22 MR. ULSH: But we'll report back

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1 to you on that as soon as we vet that list,
2 and talk to Mike and whoever else we need to.

3 CHAIR BEACH: Anything else on
4 this issue, or are we ready to move on?

5 Okay. The next on the agenda is
6 open discussion. NIOSH, I guess we're
7 putting it into your court, on data. You
8 sent out a lot of just data.

9 MR. ULSH: On the 20th. And so we
10 -- let's start with the neutron.

11 MR. ULSH: Okay. Leo, are you on
12 the line?

13 MR. FAUST: Yes, I am.

14 MR. ULSH: Basically, the status
15 on this is we are preparing a -- well, I
16 guess for lack of a better word, a white
17 paper, or a table, whatever you want to call
18 it, on estimating neutron doses at Mound.
19 It's not ready for this meeting. But I
20 didn't want to -- I wanted to provide the raw
21 data anyway, that we have in hand, to you
22 all, as soon as possible. So, that's what we

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1 put out earlier. It was like, just raw data.

2 CHAIR BEACH: Right, exactly.

3 MR. ULSH: We had -- there's a
4 large body of data on instrument surveys in
5 the field. There's also quite a lot of
6 paired dosimetry data. And we're going to be
7 using both of those sources of data, or at
8 least, we're going to be talking about them,
9 in the position paper that we will put out
10 for the next Working Group meeting. But you
11 all have the raw data that we have.

12 MR. MAURO: Is that paired gamma-
13 neutron so you have ratios?

14 MR. ULSH: Yes.

15 MR. MAURO: Okay.

16 MR. MORRIS: Yes. You'll hear
17 them described as good surveys. So if you --
18 those are the key words. In fact, if you
19 wanted to search SRDB would -- that -- those
20 key words, you'll find all the documents.

21 MR. ULSH: But you shouldn't need
22 to because I provided the SRDB numbers.

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1 MR. MORRIS: But you shouldn't --
2 but you shouldn't need to. That's right.

3 CHAIR BEACH: Would it be
4 beneficial to have a technical call, much
5 like we're going to have on Issue 9 for this
6 -- that item?

7 MR. ULSH: I think it would. I
8 think it would. As soon as we put out our
9 paper, and give SC&A some time to, you know,
10 adjust it, it might benefit from a technical
11 -- an offline technical.

12 CHAIR BEACH: What's the time
13 frame on the white paper?

14 MR. ULSH: Leo, do you have a time
15 frame in mind? I'm thinking soon.

16 MR. FAUST: Well, it will be some
17 time after the first of the year.

18 CHAIR BEACH: What?

19 MR. ULSH: We'll talk, Leo.

20 CHAIR BEACH: I was thinking
21 before Thanksgiving.

22 MR. FAUST: I doubt that very

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1 much.

2 MR. ULSH: We'll talk internally.

3 MR. FAUST: I would think some time
4 after the first of the year, perhaps before -
5 - I don't know when your next meeting is, but
6 hopefully before that.

7 CHAIR BEACH: We haven't scheduled
8 it yet.

9 MR. FAUST: Make it late in the
10 year.

11 (Laughter.)

12 CHAIR BEACH: 2009?

13 MR. ULSH: We'll talk, and get
14 back to you with a proposed date.

15 CHAIR BEACH: We'll get back to
16 that. Okay.

17 MR. MAURO: I would point out the
18 paired neutron-photon measurements have been
19 invaluable on other venues when we're
20 concerned about trying to reconstruct neutron
21 doses with poor neutron film dosimetry, when
22 you actually have data sets, where you have -

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1 - you know, whatever you have your detector.

2 I think the photon, this is -- SC&A's
3 perspective is this is the good standard when
4 you're looking for neutron to photon ratios,
5 when you're going back -- when you have
6 significant limitations in your neutron
7 dosimetry.

8 MR. ULSH: I agree in the
9 situation where you have significant
10 limitations.

11 MR. MAURO: Yes.

12 MR. ULSH: We'll be talking about
13 that issue though, in the paper as well. And
14 there is a significant body of good surveys
15 that are out there. But we just wanted to
16 get the raw data to everybody as soon as
17 possible, so that's in your hand. So, we'll
18 be getting that out hopefully before the end
19 of the year. But that's something Leo and I
20 are going to have to arm wrestle about.

21 MR. MORRIS: There are literally
22 thousands and thousands of paired neutrons.

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1 MR. MAURO: We just looked at them
2 for Hanford and we're -- it was very helpful.

3 MR. ULSH: The next body of raw
4 data that we put out was radon. But since we
5 want --

6 CHAIR BEACH: Before we do that --

7 MR. FITZGERALD: I want -- is Ron?

8 CHAIR BEACH: Yes.

9 MR. FITZGERALD: I want to see if
10 Ron's on the phone. Ron?

11 MR. BUCHANAN: Yes, I'm here.

12 MR. FITZGERALD: Okay. Did you --
13 before you move on from neutrons, the neutron
14 data issue that you've been looking at, is
15 there any clarifying questions, or anything
16 you might want to bring up at this point?

17 MR. BUCHANAN: Well, this is Ron
18 Buchanan with SC&A and I've been working on
19 the neutron issues at Mound. We understand
20 what you're saying now is -- are you saying
21 that the neutron and gamma data -- I looked
22 briefly over that. And there's several

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1 thousand pages of pretty good survey data
2 there done with Rimbaud-type machines,
3 instruments.

4 Are you proposing to use this just
5 for unmonitored workers, or are you proposing
6 to use this to replace NTA film, or have you
7 made that decision yet?

8 MR. ULSH: We haven't made that
9 decision yet, Ron. But I think part of it is
10 going to be where we have reliable personnel
11 dosimetry. So, I'm talking about a person
12 wearing an NTA film, and a person also
13 wearing a gamma -- beta-gamma film. That
14 would certainly be the first source of data
15 that we would use.

16 In order to do that, we have to
17 talk about limitations of the NTA film, in
18 terms of Mound and whether or not that
19 presents us with problems in terms of the
20 reliability of those measurements. So,
21 that's going to be part of our report,
22 considering potential issues with the NTA

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1 film, and whether that does or does not
2 prevent us from using that as the primary
3 source of neutron dose estimation.

4 MR. BUCHANAN: Okay. So, that
5 decision has not been made yet?

6 MR. ULSH: Not finally. Although,
7 I can tell you that we're leaning towards
8 using the NTA film results. But we still
9 have a lot of things to talk about on that in
10 terms of, you know, some of the issues that
11 have been discussed in previous meetings,
12 like, you know, fading on an NTA film, or how
13 much of the spectrum falls below the energy
14 threshold for the NTA film. Those are issues
15 that we will address in that report.

16 MR. BUCHANAN: Okay. That's where
17 SC&A is standing at that time, is the energy
18 ratio and the fading as opposed to the
19 workplace neutron energy spectrum.

20 MR. ULSH: Right. We're aware
21 that those are issues that are of interest.
22 So, we will be addressing them.

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1 MR. BUCHANAN: Okay. Thank you.

2 MR. FITZGERALD: Radon?

3 MR. ULSH: Okay. It's pretty
4 simple on radon. Same kind of thing. We are
5 preparing a white paper and that will be
6 ready in advance of the next Working Group
7 meeting. In the meantime, we have provided a
8 list of documents in the SRDB. They are
9 health physics progress reports that provide
10 radon data in them.

11 We have those progress reports up
12 through the 50s. I think that's as far as it
13 goes. We have not yet located the documents
14 for the 60s. But we're looking for those. I
15 suspect that they exist, we'll just have to
16 get them redacted. That's my suspicion.

17 MR. FITZGERALD: Yes. The
18 question I have on that, you know, we talked
19 about the one or two thousand data points,
20 which I think really changes the issue from
21 where it was before. Which, you know, we had
22 this sort of one graph sample that was taken

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1 in 1980. But these values, having taken a
2 quick look, seem to be in the R building
3 either prior to or during the D&D of the old
4 cave. So, this is sort of contemporaneous
5 with what they were doing with the old cave
6 to you know, go ahead and cap that and all
7 that.

8 And then in the early 60s, they
9 went ahead and built SW over that, you know,
10 over that. Which led to the ultimate, sort
11 of problem, that we were talking about, which
12 seemed to be the exhalation of the radon into
13 SW and to some extent R, but mostly SW. I
14 guess I'm having a hard time, maybe you can
15 help me on that.

16 The relevance of these
17 measurements in the R building, different
18 rooms in the R building, presumably from
19 residual contamination, perhaps the old cave,
20 you know, from the old cave going into the R
21 building. But how that would relate to a
22 source term that would have come from an

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1 enclosed, fairly hot source of radium that
2 had a concrete cap, that you know, had a
3 conduit into the overlying building, which
4 was negatively pressured. Which seems to
5 present sort of a perfect storm, if you're
6 trying to you know, come up with a radon
7 problem, is to build a building over top of a
8 radium source, and then have it capped, and
9 then have a you know, a pipeline or a conduit
10 into the overlying building.

11 And they were seeing, I guess, the
12 higher levels coming from that source. I
13 don't know how those measurements in the R
14 building in the 50s, relate to the presumably
15 concentrated values that resulted in the
16 buried cave, and then coming into the SW. I
17 realize that they're all radon measurements.

18 But I'm not sure how --

19 MR. STEWART: First of all, the R
20 building and the SW building were sampled.
21 And the SW building is -- was not in fact
22 built over the cave. It was actually room

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1 SW1 of the -- the cave was actually in room
2 SW1. And what they did in fact, just raised
3 the level of the floor about three or four --
4 and built a new room over that.

5 And we have measurements from that
6 later I think, `79, `80, `81, and `82, in
7 that time frame. Our reasoning is that it's
8 quite obvious from the documentation, even in
9 the 40s, that the processors knew they were
10 going to have a big problem with short-lived
11 alpha emitters as a result of this work.
12 We're not going to estimate a dose. We're
13 going to estimate a maximum dose. And we
14 figure a great place to tell is during the
15 process period of the activity in the cave.
16 We can't imagine a dose higher than that.

17 MR. FITZGERALD: I guess that's
18 what I'm trying to figure out. Because in --
19 I guess talking to Jenkins and folks that did
20 the monitoring, I think their concern was
21 that the circumstances with the cap on the
22 old cave area, and the concentration of, I

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1 guess, radon in that space, and then the
2 exhalation through that rather narrow
3 conduit, whatever it was, served a little
4 seam in the floor into the building, was
5 pretty unique in the sense that it was almost
6 a perfect radon machine in a sense.

7 I was just trying to figure out if
8 in fact the, you know, the room measurements,
9 while the cave might have specific
10 contaminations, of course in the 50s before
11 the D&D, whether that would be bounding of
12 that circumstance or not.

13 MR. STEWART: Well, in fact, there
14 are results from the entire operational
15 period of the cave in operation. And there
16 is a variety of ways of looking at it. You
17 can take the maximum radon result from that
18 operation period, and you can make that a
19 maximum dose. You can also take, okay, this
20 is what it was when it was remediated --

21 MR. FITZGERALD: Right.

22 MR. STEWART: -- and make that a

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1 maximum dose. And I've always had a little
2 trouble with the concept of a maximum dose,
3 but it's clear to me in doing some looks at
4 these things that a very small amount of
5 radon can be considered in a maximum dose in
6 a results -- in -- can I talk about this?

7 MR. ULSH: Sure, go ahead.

8 MR. STEWART: Results in a
9 compensable case based on radon alone, or
10 part of a year of exposure. It does not take
11 much radon. Current value of the GPD, that
12 they assign as the relevant, for R building
13 or SW building, is eight and a half working
14 level months. If you give someone that for a
15 year, most lung cancers are going to be
16 compensable wholly on that. And if you want
17 to throw in Plutonium-238 or Polonium, you're
18 only -- it's like being pregnant. You're
19 only so compensable.

20 So, you know, we can put a bigger
21 number in there. And we've got some pretty
22 big numbers from these short-lived alpha

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1 products in the 50s. So, we are going to go
2 look at those, find out what best big number
3 to put in there was, and call that a maximum
4 dose. We don't -- we cannot characterize in
5 detail because there simply is no data to
6 calculate an accurate radon dose for those
7 people between `58 and --

8 MR. FITZGERALD: And that's kind
9 of where that's coming from. Because in a
10 way, this is a surrogate data from the
11 standpoint of the site, a surrogate data from
12 different time frame, different set --

13 MR. STEWART: Yes.

14 MR. FITZGERALD: -- of
15 operational circumstances, even through it's
16 still the old cave. And I was just trying,
17 you know, to figure out is this commensurate
18 in terms of characterization. And I guess
19 without knowing what the you know, what the
20 actual measurements were in some of these
21 areas during that later time frame, you are
22 kind of guessing and trying to say, well, can

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1 we pick a scenario where it's -- you know, as
2 you were just saying. It's pretty high, it's
3 not likely, but without a way to do it, not
4 likely to be higher than that in these
5 overlying buildings.

6 MR. ULSH: Also keep in mind, Joe,
7 that we've not yet retrieved the health
8 physics progress reports for the 60s.

9 MR. FITZGERALD: For the later,
10 yes.

11 MR. ULSH: If they follow the same
12 format as the earlier health physics progress
13 reports, there are radon measurements in
14 there. But we don't know that until we get
15 those reports.

16 MR. FITZGERALD: Yes. I think
17 that's going to be very instructive. Because
18 once the whole gate is capped and SW is --
19 they raised the floor and all that, I think
20 that would be a lot more indicative, I guess.

21 MR. STEWART: Yes. We could
22 assign them year by year, and certainly, when

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1 we look at it, it would make more sense from
2 a dosing point of view. More accurate dose
3 reconstruction.

4 MR. FITZGERALD: Right.

5 MR. STEWART: But not necessarily
6 a higher dose.

7 MR. FITZGERALD: Yes. And I guess
8 the reason this has been a salient question
9 for us is that you know, interviewing Jenkins
10 and looking at this issue, this all came up
11 because they were picking up lung alphas
12 that, you know, that were pretty high. And
13 they were thinking they had a plutonium
14 issue, when the back track turned out it
15 wasn't plutonium at all; it was radon.

16 So they would actually have been
17 able to see it in in vivo counts, which
18 suggests it was fairly hefty. And you would
19 have to say, whoever was in SW19, or adjacent
20 buildings, were probably getting this dose
21 you were talking about, which is a hell of a
22 dose.

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1 MR. STEWART: I believe those
2 current values are reflected, those values
3 are reflected in current technical basis
4 document. The numbers are pretty large.

5 MR. FITZGERALD: The problem with
6 the technical basis document, I think as we
7 originally reviewed it, was it was based on
8 that one sampling that Jenkins had done. And
9 it was just that one sample. And I guess
10 there was some question as to how reflective
11 of that area, given he himself admits that it
12 probably isn't reflective. I think you have
13 those interview notes as I recall on Jenkins.

14 But that whole account of why they
15 did it, how they did it, and whether there
16 may be some implications for additional
17 exposure in those rooms and buildings, I
18 think, that was pretty evident. They felt
19 that it was a real issue and that's one
20 reason we went ahead in the '70s and did
21 remedial action and ventilated that space
22 just because it was so high. So, anyway.

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1 MEMBER ZIEMER: Joe, are you
2 really asking whether the air concentration
3 in the later building could have been higher
4 than the original cave? What?

5 MR. FITZGERALD: No. I'm just
6 saying that under the circumstances by which
7 they were seeing elevated concentrations in
8 these overlying buildings --

9 MEMBER ZIEMER: Yes.

10 MR. FITZGERALD: -- which was
11 almost like a capped crawl space.

12 MEMBER ZIEMER: No, you're saying
13 source term.

14 MR. FITZGERALD: Right.

15 MEMBER ZIEMER: But the volumes
16 could
17 be --

18 MR. FITZGERALD: With the --

19 MEMBER ZIEMER: -- the room
20 volumes could have been small, I suppose.

21 MR. FITZGERALD: Right. And the
22 concentration that was going on with the

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1 negative pressure, the question would be, you
2 know, whether you would be seeing a much
3 higher dose -- a much higher concentration
4 level, which is sort of, and this is a little
5 and/or, because you only have this one
6 individual that they actually did the lung
7 counts on. But they're picking up the radon
8 daughters in his lungs. And they waited,
9 actually took him out of the area, and
10 waited, and it gradually went down.

11 But so, it was, I would think,
12 fairly hot in that particular area. The
13 question is, how broadly do you want to
14 define that area.

15 MEMBER ZIEMER: Right.

16 MR. FITZGERALD: Because it was
17 only one sample taken, it is hard to
18 characterize that area.

19 MR. ULSH: Well, that's the -- if
20 I'm thinking about the right guy, that was
21 the guy that was sitting, had his office
22 right on top.

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1 MR. FITZGERALD: In fact, he was
2 sitting on top of the hole.

3 MR. ULSH: Right.

4 MR. FITZGERALD: So, you know, he
5 was probably the maximally exposed
6 individual. It may not -- it's not clear you
7 know, how many other people were in the area
8 and how many other adjacent rooms were
9 involved. But there's no question, at least
10 he was getting dosed to the point where it
11 was showing up in his in vivo counts, and
12 from radon, which, yes, they thought it was
13 plutonium event that they were dealing with.

14 It turned out to be radon event.

15 So, you know, that's the
16 implication of trying to figure out. If you
17 only have one sample, is it possible to go
18 back and come up with a surrogate, or a
19 representative sample? I think it's a
20 reasonable approach. And if you can get the
21 1960s progress reports, I think that would be
22 even closer. I'm a little concerned about

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1 the pre-1960, because I'm not so sure -- this
2 is your question -- I'm not sure if the
3 operating phase of the cave and the
4 measurements in these adjacent facilities
5 would necessarily be the same as that.

6 It might be. It might be even be
7 more. But I'm not sure. That's hard to
8 figure.

9 MR. STEWART: We have three
10 different types of results. Depending on
11 where you look in the data, we have the cave
12 ventilation itself, and then we have the
13 access area behind, what they call the high-
14 risk area. The cave itself wasn't accessible
15 in terms of you know -- and then they have a
16 low risk area. They have three gradations of
17 samples. And they are called out
18 specifically in some spots. And they also do
19 the corridors, and they do some results in R
20 building, too.

21 R building is not necessarily,
22 it's not over top of the cave site. It's an

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1 adjacent building. But it, I believe what
2 you're seeing there is the same source term,
3 but it's a limited processing going on there.

4 MR. FITZGERALD: With more
5 dilution.

6 MR. STEWART: Yes. Not
7 necessarily the cave itself. So there are
8 different results that you're going to get.
9 So you have your choice of all them. I don't
10 think it's plausible to assign somebody the,
11 you know, the air concentration that they're
12 measuring at the exhaust stack for the cave,
13 for example.

14 You just got to go pick a maximum
15 number that you like.

16 MR. FITZGERALD: Well I'm just
17 saying, I don't -- without having any
18 supporting data, it's hard to pick. Because
19 you know, it's sort of like, this individual,
20 four individuals in SW, had their own exhaust
21 stack essentially. Because of the pressure
22 gradient, they were actually getting -- and

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1 you know, getting it through the fissure, or
2 whatever they had over the collapsed cave.
3 So, in a sense, they were getting continuous
4 source.

5 Now my question is, how much was
6 coming through. But we'll find out a lot.

7 MR. STEWART: Yes, it looks like a
8 lot.

9 MR. FITZGERALD: It's sort of
10 conjecture to say, well, how much is a lot.
11 And I understand your issue is, at some
12 point, it's moot.

13 MR. STEWART: Yes. Yes.

14 MR. FITZGERALD: So, I don't --
15 that's another argument to say, well, you
16 know, we don't know, but we're going to go
17 ahead and assign this. But clearly, it's
18 overkill.

19 MR. STEWART: Yes. There is a
20 point at which latency issues begin to limit
21 compensability. For instance, if you have a
22 very short latent period between exposure and

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1 the diagnosis of lung cancer, say 30 days
2 wherein you were exposed to a large amount of
3 radon, 30 days later, you're diagnosed with
4 cancer, then the probability of causation, no
5 matter how high the dose, is going to be
6 essentially zero. And it plays out according
7 to the epidemiological tables over five years
8 or so for most cancers, I believe. I'm not
9 an expert on that.

10 MR. FITZGERALD: But again, you
11 know, the other question, too, is that it's
12 hard to, outside this one individual, know
13 what was -- what individuals are resident to
14 the area in question. I mean, I hadn't seen
15 anything that kind of gives you an idea of -
16 because SW was, you know, probably a major
17 process area. And who knows. So I don't
18 know how that would, you know, how one would
19 apply that, either.

20 MR. STEWART: It's always
21 problematical, because there are always
22 different levels of information available in

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1 a case. You may have a very detailed work
2 history for the individual from a telephone
3 interview, and you may have very little.

4 So typically, our approach is to a
5 little more sweeping, and that is, you know,
6 all personnel assigned to R and SW, for
7 example, would be one way to approach it. We
8 can typically get to that level of detail
9 based on bioassay records, and on external
10 dose monitoring. If they have neither one of
11 those, we can be pretty sure that they didn't
12 work in R or SW.

13 MR. ULSH: Well, and due to the
14 nature of the exposure source, and we're only
15 talking about radon. So really, we're only
16 talking about lung cancers. And really,
17 we're only talking about non-compensable lung
18 cancers, or the ones that are non-compensable
19 right now. So, that's a pretty small handful
20 of claims.

21 MR. STEWART: We haven't looked at
22 that for some time because we have, we're up

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1 to almost 28,000 cases now.

2 MR. ULSH: Well, yes, but --

3 MR. STEWART: Yes. No -- yes, fewer
4 than ten that were not yet compensated. And
5 some of those had not been processed as yet.

6 MR. FITZGERALD: So, you're still
7 working this up. But from a plausibility
8 standpoint, you would have to draw some
9 parallels with comparable measurements or
10 concentration levels to probably, you know,
11 the limited data that exists for that one
12 location.

13 MR. STEWART: Possibly, but we may
14 be looking at an unprecedented amount of
15 radon. We have to be ready for that
16 conclusion. In fact, the cave facility was a
17 substantial dollar investment that was
18 scheduled to be reused for other processes,
19 but in fact, was demolished and disposed of
20 just as a result of this radon problem.

21 So, you know, they certainly
22 changed their minds about health protection

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1 as a result of this process.

2 MR. FITZGERALD: Well, that's the
3 issue of how one brackets the issue in terms
4 of the data that's available, I think is the
5 thing that I'd be interested in. I think the
6 data itself suggests there's a lot of data,
7 but how it would fit into that analysis is
8 the challenge. I'm not sure one can. It
9 might turn out that there might be some data
10 from the later periods that would be closer.

11 MR. ULSH: So if I hear you
12 correctly, Joe, and if I could summarize,
13 perhaps, there are two concerns that you have
14 at least so far looking at the data that's
15 available right now.

16 One is applying the radon
17 measurements from the earlier time period to
18 the later time period. In order to do that,
19 should we decide that we need to do that, we
20 would have to discuss whether or not the
21 earlier data is number one, representative,
22 or number two, bounding. We'd have to make

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1 the case that it is in order to be able to do
2 that. If we find the health physics progress
3 reports, and they do indeed have data for
4 that later time period, then that issue kind
5 of goes away.

6 The second issue though is, let's
7 just assume that we have the data that we had
8 in the earlier period, and we have that data
9 for the 60s once we find it. Then we have to
10 make the case that these areas that were
11 measured are indeed applicable or bounding,
12 you know, across the site, or you know.

13 Have I summed up your two
14 concerns?

15 MR. FITZGERALD: Yes. I think the
16 first is clearly one where you can come up
17 with a surrogate means of assigning a -- a
18 concentration value to others getting seen
19 there -- and the second thing, I think
20 clearly is one of the defining what the
21 bounds are. And we're not clear on how
22 extensive the problem was in SW and whether

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1 it -- well, it was formerly in R. We didn't
2 see anything definitive, but we had an
3 interview where a tech said, yes. His
4 counter went off, you know, went off scale
5 over a fissure in R.

6 So, you know, clearly there's some
7 implications for R, as well. So this
8 discussion of bounding the issue both ways
9 would be an issue.

10 MEMBER CLAWSON: Well, the area --
11 because in the interview - and correct me if
12 I'm wrong on this - when we were discussing
13 this, when they found that fissure, they
14 found the amounts that they found, they
15 didn't look any other place. They looked --
16 they went, and the result with generation of
17 where it was going, which ventilator, that
18 whole system, but they never checked into
19 where there was any other fissures or
20 anything else.

21 Because I guess this went through
22 all sorts of different buildings and so

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1 forth. They had issues with radon in
2 numerous places. They - and my understanding
3 is they blamed it on the coal fired
4 generating plant down the road that did a lot
5 of different things. But from the interview,
6 and I guess this is what I found interesting,
7 was once they saw the levels they did, they
8 never did any more investigation, because
9 when they figured out where it was coming
10 from, they ventilated that. So they never
11 looked into any other areas that it would
12 have been feeding into the building,
13 different parts of the building.

14 MR. ULSH: We're kind of back to
15 the same issue that we were talking about
16 this morning in terms of how tightly you can
17 go out of circle. And for people who didn't
18 work at Mound, myself included, we can talk
19 about R building, we talk about SW building,
20 it's really one building.

21 MEMBER CLAWSON: Yes. Right.

22 MR. ULSH: So I think from this

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1 particular source term, the biggest circle
2 would be all of R and SW building. Can you
3 draw the circle tighter? Well, I don't know.
4 We'll have to make a case for that.

5 MS. ROBERTSON-DEMERS: You're not
6 throwing building 21 in here?

7 MR. ULSH: Building 21, the
8 storage facility on the -- near the plant
9 boundary? That was an unoccupied storage
10 building. I mean, people went in briefly to
11 do the routine surveys, but it wasn't an area
12 that was routinely occupied.

13 MR. ALVAREZ: This is Bob Alvarez. The
14 environmental surveys through that building
15 indicated significant depositions from
16 radon/thoron emissions.

17 MR. ULSH: That wouldn't necessarily
18 surprise me, considering that they had
19 thousands of drums of thorium stored in that
20 building. Well, it wasn't the drums.
21 Actually, they emptied the drums into
22 building 21. So that wouldn't surprise me.

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1 But the point is is that that
2 building itself was unoccupied, and it was
3 geographically removed from the rest of the
4 site. It was near the site boundary. And
5 there was a fairly large area between.

6 MR. ALVAREZ: Yes. I mean, I
7 think that that building probably had workers
8 there in greater numbers when they were
9 putting it there, and repacking it to remove
10 it.

11 MR. ULSH: Yes, I agree that we
12 probably have had the maximum number of
13 workers when they were doing -- when they
14 were emptying the drums into that building.

15 CHAIR BEACH: Didn't they do the
16 redrumming in that building also where they -
17 -

18 MR. ALVAREZ: Yes. They had --
19 they found a customer, of course in the mid-
20 70s or late-70s, and eventually got shipped
21 off site.

22 MR. ULSH: Well, we're talking

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1 about a couple of different operations here.

2 Yes, that did happen, Bob, where they found
3 a customer. The customer came on site and
4 removed that material.

5 But prior to that, in 1955, Mound
6 received -- well, late 1954, and in 1995,
7 they received quite a large amount of thorium
8 residues, Brazilian oxide residues and some
9 other materials, in anticipation of a thorium
10 pilot plant. That thorium plant never
11 actually came to fruition. The project was
12 canceled, and then Mound was left sitting
13 there with all of these thorium residues.

14 And some of those drums were in
15 very poor condition, and they had to be
16 repackaged, some of them a number of times.
17 So I think that's what Josie was asking about
18 --

19 CHAIR BEACH: Right.

20 MR. ULSH: -- those earlier
21 repacking operations. In fact, the thing
22 that lead to construction of building 21 was

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1 the problems that they were having with these
2 thorium drums deteriorating. So they built
3 building 21, and dumped all the stuff into
4 that building.

5 So I don't -- I can't remember off
6 the top of my head exactly where the thorium
7 redrumming operations occurred. I don't
8 think it was in building 21, because building
9 21 wasn't built until later. It was done
10 outside.

11 CHAIR BEACH: Yes, I remember the
12 discussions, but don't remember the building.

13 MR. FITZGERALD: It was done
14 outside.

15 MR. ULSH: Yes.

16 MR. FITZGERALD: 21 was built with
17 outside venting because of the thoron
18 problem.

19 MR. ULSH: Right.

20 MR. FITZGERALD: But again, I
21 think that would have been maybe a periodic
22 exposure, but it wouldn't have been very

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1 long. I mean, workers went in, went out. I
2 think it was a pretty known issue on the
3 thoron.

4 MR. ULSH: Yes.

5 MR. FITZGERALD: Anyway.

6 MR. ULSH: I think the significant
7 radon issue is going to be related to the old
8 cave, and the environs around, and the R and
9 SW building.

10 MR. FITZGERALD: That's pretty
11 much -- I think you've captured it.

12 MR. ULSH: So as an action item,
13 I'll volunteer before you even -- we are
14 pursuing the health physics reports from the
15 60s.

16 CHAIR BEACH: Right.

17 MR. ULSH: When we locate those,
18 if any redaction is necessary, we'll work
19 with DOE to accomplish that, and then we'll
20 make you all aware that that's available.

21 MR. FITZGERALD: Yes. The only
22 issue on that, whether, you know, you have a

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1 freshly capped source like that, whether the
2 actual exhalation came about through later,
3 you know, fracturing, you know. These things
4 typically are pretty solid in the beginning,
5 but they over time fracture. And whether
6 that was the -- so measurements right after
7 it was capped may not necessarily reflect the
8 circumstances five, ten years down the road.

9 I'm just throwing that out. I'm
10 not saying I know anything about it, but --

11 MR. ULSH: Yes.

12 MR. FITZGERALD: -- if it looks
13 real clean, I wouldn't necessarily assume
14 that that was the case throughout.

15 MR. ULSH: Well --

16 MR. STEWART: It didn't look all
17 that clean.

18 MR. FITZGERALD: What's what?

19 MR. STEWART: It didn't look all
20 that clean.

21 MR. ULSH: Well, the D&D in the
22 old cave a number of times, but I think the

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1 final time was in 1959. So, yes. If you had
2 data from say, 1960, or even 61, that may not
3 be representative of later in the 60s.

4 MR. FITZGERALD: A little later in
5 the 60s, I think I'd be more comfortable that
6 that's probably more reflective.

7 MR. ULSH: Yes, we're looking for
8 these reports throughout the 60s. So we'll
9 let you know when and if, hopefully, we find
10 them.

11 CHAIR BEACH: Are you coming up
12 with a white paper on that, on the radon
13 issue also?

14 MR. ULSH: Yes.

15 CHAIR BEACH: Any idea of time
16 frame?

17 MR. ULSH: Don't say next year.

18 (Laughter.)

19 MR. ULSH: You know, a lot of it,
20 Josie, is going to depend on when we actually
21 are successful in locating these progress
22 reports.

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1 CHAIR BEACH: Those -- right.

2 MR. ULSH: That's kind of the
3 necessary precursor to it.

4 CHAIR BEACH: That makes sense.

5 MR. ULSH: I am hoping that it
6 will be in advance of the next Working Group
7 meeting. But it really depends on --

8 CHAIR BEACH: I understand. So I
9 won't look for a date on that then. And the
10 other item, if there's no more on radon, is
11 the roadmap issue.

12 MR. ULSH: Yes. The action item
13 that we had on the roadmap was, at the last
14 Working Group meeting, it was requested that
15 we add in some information to the roadmap
16 with regard to the incidents that occurred,
17 and where information on those incidents
18 could be found.

19 Sam Chu of the ORAU team did, in
20 fact, go in and add that information in, and
21 that was the only minor change on the roadmap
22 that we made this time around.

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1 CHAIR BEACH: We did ask for hot
2 cell descriptions under that same item.
3 Those were made available, weren't they? The
4 drawings, were you able to locate anything on
5 that?

6 MR. STEWART: Well, I was not able
7 to identify detailed drawings of that, which
8 kind of surprised me, because they worked
9 with that fairly late.

10 CHAIR BEACH: Yes.

11 MR. STEWART: I did talk to some
12 people who had worked with it. They actually
13 -- the drawings of the cell itself are
14 present on drawings made in the `50s and `70s
15 -- `50s? No. `70s and certainly in 1991.
16 Yes, that's the old cave.

17 The hot cell is what they refer to
18 as the new cave, and it basically was an
19 isolation cell - Brant's talked about this
20 before - and the idea was that it would be
21 less permeable to radon. We have a drawing
22 of it, and we have some dimensions. I'll

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1 just read you what I have.

2 It's an isolation cell in SW-140.

3 The cell itself is including a -- included
4 on drawings of the SW building, first floor,
5 dated `73 and `91. The new cave area
6 actually is a suite of rooms that encompass
7 the areas surrounding the isolation cell, and
8 it includes a number of different rooms in
9 SW. I've got a list of them here.

10 But the new cave area, when you
11 see that referred to informally in a
12 narrative, it could be talking about the
13 isolation cell, or it could be talking about
14 the room surrounding it. SW-140, the room
15 where the cave actually was, had fume hoods
16 in it, and some lab benches. The adjoining
17 room, SW-120 -- or, SW-22, had glove boxes
18 around the periphery of the room, and a work
19 area in the middle.

20 One of those glove boxes had a
21 pass through to the isolation cells, so that
22 they could put things in and out through that

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1 glove box. Let's see what else we have here.

2 If you look at that hot cell, you would see
3 two large windows, very thick windows.

4 People here are probably familiar with those.

5 MEMBER CLAWSON: Lead shielded.

6 MR. STEWART: I don't know that
7 they were lead shielded. I would assume that
8 they are, but I haven't found data that shows
9 that to be the case. There are two
10 manipulator arms there by the windows, and
11 in-line filter for the ventilation exhaust.
12 Also on that wall were two air samplers for
13 the operators of the cell.

14 On the other side of the hot cell
15 was a door, an access door you could actually
16 go in, and that was room 136. So you could
17 actually enter the cell. This room, later
18 in its operational history, was always
19 accessed on respiratory protection. So it
20 was not a clean area, even in the outside
21 part of the cell. I mean, you had to have a
22 mask on to be in the new cave area and

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1 operating the manipulators.

2 So really all I was able to give
3 you is a kind of a qualitative description.

4 CHAIR BEACH: I think that's what
5 brought the question up at the last Working
6 Group meeting, and I think, Brad, you were
7 kind of the lead on that --

8 MEMBER CLAWSON: Yes.

9 CHAIR BEACH: -- and I think
10 because --

11 MEMBER CLAWSON: We were trying to
12 look at the ventilation system, and try to
13 figure out how they to have this design
14 because I guess I keep getting confused when
15 we're talking about these documents and so
16 forth, have them going into the new cave and
17 doing this and this. And the next one
18 they're in respirators and stuff, but there's
19 no determining -- it's kind of vague to me.

20 I really had a hard time following it,
21 because it seemed like, in some senses, they
22 encompass this whole section of it, they

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1 called it the new cave. And in other ones,
2 they were calling them hot cells. And they
3 were basically the same thing, is what I was
4 being told. But I'm wondering if the center
5 portion of it is what they were classifying
6 as a hot cell.

7 MR. ULSH: I think that's the
8 case. The hot cell is inside the new cave.

9 MR. STEWART: Yes. The hot cell
10 is inside a suite of rooms that's called the
11 new cave.

12 MEMBER CLAWSON: Right. And that
13 -- I guess that's where I was getting into
14 problems, because I was picking up in that
15 they, like you just said, that they were
16 respiratory, even on the outsides. And I was
17 trying to figure out what the -- how the
18 ventilation system worked.

19 Because in talking with some of
20 the interviewers, and stuff like that, this
21 add-on to this building and then add-on to
22 this created quite a problem with

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1 ventilation. Those outer suite of rooms that
2 you said were supposed to stay clean, but
3 they didn't. And this is why I was looking
4 into the flow pattern of -- that's why we
5 were trying to find these prints and stuff
6 like that, because those outer rooms were to
7 be cleaned, and then they ended up --

8 CHAIR BEACH: And were they
9 ventilated?

10 MEMBER CLAWSON: And how they --
11 yes, how they ventilated. And part of the
12 issue in my -- and you've got to understand,
13 I'm taking this just from some of the
14 interviewers of some of the maintenance
15 people, and so forth. We discussed these
16 buildings were added one onto the other and
17 back and forth, and the ventilation systems
18 didn't quite match what the facility needed.

19 And so they had -- that's where it got into
20 a lot of this spread of contamination issues.

21 That's why I was really trying to
22 visualize what they were talking about, and I

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1 had a hard time.

2 MR. ULSH: Okay. I've got a
3 couple of thoughts on that, Brad.

4 I think I had some photographs of
5 the new cave facility. I have to go back and
6 locate those, and I'll get those to you.
7 That may not entirely answer your question,
8 but it'll give you a little bit of a visual.

9 MEMBER CLAWSON: What I was really
10 trying to look at, because it was a surprise
11 from what I read, and some of the documents
12 and so forth, from the Mound Museum and
13 stuff, that it was a surprise that all of a
14 sudden these other rooms started, and they
15 come to find out that they had ventilation
16 issues, and I guess there was a pass-thru
17 path to the old cave that got into some
18 issues, too. And that's why I was trying to
19 get an overview of what we actually had here.

20 The main thing I was looking at is
21 the flow pattern for the air and so forth
22 like that. Later on, I know that they made

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1 some more modifications to try to get a
2 handle on what the issue was.

3 MR. ULSH: I know that the --

4 MS. ROBERTSON-DEMERS: I've got a
5 suggestion. In the mid-1990s, they went
6 through room by room in buildings, and did
7 air flow studies with smoke. And I don't
8 know if that's available for that area. I
9 would assume that it was because, at least
10 for our building, they did it for every
11 laboratory.

12 And it was for the purpose of
13 making sure that things were positioned, and
14 there should be a diagram that was prepared
15 by the person who did it that will show you
16 the air flow.

17 MEMBER CLAWSON: Because what time
18 period did the new cave come online? Do you
19 remember what that was?

20 MR. ULSH: Well it was after the
21 old cave, and the old cave was ended in 1959,
22 so it probably would have been early to mid-

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1 60s.

2 MEMBER CLAWSON: Okay. Because
3 what I got was that there -- this was a
4 reoccurring issue, contamination issues and
5 so forth with these caves, and where they
6 spread and where it went. And that this -- I
7 guess it's called a -- it was actually a pipe
8 chase or something between the old cave and
9 the new area.

10 MR. STEWART: Pipe chase? I know
11 that that's a case.

12 MEMBER CLAWSON: I wouldn't say
13 it's a pipe chase, but --

14 MR. ULSH: Right.

15 MEMBER CLAWSON: This is where
16 they had the radon issues.

17 MR. STEWART: Yes. It's --

18 MEMBER CLAWSON: I call it a pipe
19 chase. You got to realize, each -- I call it
20 access tunnel, whatever you want to be able
21 to call it.

22 MR. STEWART: Yes. I have not

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1 seen evidence of that on the drawings that
2 I've seen. I have a construction drawing
3 from an as-built in the `50s that shows the
4 new cave. Yes, sorry, `50s.

5 The new cave, actually, the first
6 operation we have starting in there is `66,
7 although one source gives that date as 1960.

8 King says 1960, and I believe he is
9 incorrect in that assumption. But it looks
10 like operation started in `66 in the new
11 cave.

12 I haven't seen anything
13 underground, under the slab, under the floor
14 level from the old cave to the new cave. Not
15 to say that that's not a possibility, I just
16 haven't seen evidence of that. If you look
17 at a drawing of the building, SW-1, which
18 later became SW-19, had a hallway from it
19 that went right down to the new cave area.
20 So it certainly was easy to access from that
21 side.

22 MEMBER CLAWSON: I mean, this is

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1 trivial, but we just found out a week ago
2 that two of our facilities were connected by
3 pipes, and now we have 23 people moving up to
4 just last week. We now know it. We never
5 knew any of these pipes' distance. And this
6 is why it's such an interesting issue to me
7 is because we have the same thing at our site
8 of buildings being added onto buildings and
9 so forth like that, and it's kind of a
10 convoluted mess of stuff.

11 And these came out in the
12 interviews and so forth like that -- but
13 these - we kept referring to them as
14 communicators and so forth - they came up,
15 and they said, the outside area is supposed
16 to have been cleaned. It ended up
17 respiratory. Now there was a lot of issues
18 to it, flow ventilation and so forth like
19 that, and we kept having experienced
20 contamination. That's just why I wanted to
21 get a handle on an overview of what were we
22 looking at here. I don't know what we can do

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1 on it, but --

2 MR. ULSH: Well, I think there's
3 three things that we can probably do. Number
4 one, I can go try to find those photographs.

5 And that will at least give you the visual
6 representation.

7 MEMBER CLAWSON: Right.

8 MR. ULSH: Number two, if I could
9 ask, Kathy, if you could perhaps just put in
10 an email any information that you can think
11 of that would help us locate that study that
12 you're talking about, you know, that
13 ventilation study in the early '90s, and we
14 can look for that.

15 And number three, I can go do a
16 targeted search. There's a number of blue
17 prints available at the Mound Museum that we
18 really haven't messed with too much.

19 MEMBER CLAWSON: Right.

20 MR. ULSH: And we can go look and
21 see if we can find any blue prints related to
22 the old and new cave in relation to the R and

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1 SW building.

2 MEMBER ZIEMER: And that's where
3 you run into the problem. The blue prints
4 and the as-builts are often different, and I
5 think that's what you're talking about.

6 MEMBER CLAWSON: Yes, very much
7 so.

8 MEMBER ZIEMER: So, if you pull a
9 blue print, you've got to make sure it's an
10 as-built, and not a design that somebody
11 said, well, that won't work, so let's leave
12 these pipes in there and add something.

13 MR. ULSH: Well, I know just the
14 guy who can help me look through these blue
15 prints. I don't know what we'll find, if
16 anything, but we'll look.

17 MEMBER CLAWSON: Yes, and I'd just
18 like to -- I'd like to be able to look,
19 because there's a lot of -- almost all the --
20 most of the interviewees that we've
21 interviewed and talked with and so forth have
22 comments about the new cave and old cave and

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1 how they were set up, and they were trying to
2 explain to me how these buildings were added
3 on, and new processes would come in and tied
4 into other stuff, and it was -- it would be
5 pretty hard to follow. And I visually
6 couldn't see what -- half of what they were --
7 -- I got a rough estimate. But if we could
8 find anything --

9 MR. STEWART: There are excellent
10 building descriptions for some, even many of
11 the buildings at Mound, but I have not been
12 able to locate them on that one, one of those
13 for either R or SW. I would make --
14 certainly make this job a lot easier if we do
15 that. Because they're quite detailed, and
16 have photographs and diagrams. But I haven't
17 found that yet. Could it be in the
18 classified room?

19 CHAIR BEACH: And Brant, you said
20 Mound did update the old drive, or update the
21 roadmap?

22 MR. ULSH: Yes.

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1 CHAIR BEACH: Can we get a copy of
2 that? Do we have to do download it from the
3 --

4 MR. ULSH: No. We got it.

5 CHAIR BEACH: I've got some
6 questions about that.

7 MR. ULSH: I had forwarded it by
8 email, but it --

9 CHAIR BEACH: I didn't get it by
10 email.

11 MR. ULSH: You didn't?

12 CHAIR BEACH: No. I believe it's
13 on O drive, but I'm not going to have access.

14 On the 20th, you did deliver to the O drive.
15 I'm wondering, can I get a copy of it, since
16 I won't have access for a couple of weeks?

17 MR. ULSH: Sure. Sure, yes.

18 CHAIR BEACH: Great. If you don't
19 mind.

20 MR. ULSH: I'll put it on a disk
21 and FedEx it to you.

22 CHAIR BEACH: Okay. And then we

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1 talked about -- you had other questions on
2 the roadmap?

3 MS. ROBERTSON-DEMERS: I did.

4 CHAIR BEACH: Sorry.

5 MS. ROBERTSON-DEMERS: First of
6 all, is there a classified version of it?

7 MR. ULSH: There is a version that
8 contains more detail that we're not
9 circulating.

10 MS. ROBERTSON-DEMERS: Which
11 includes information from appendix B? The
12 King document?

13 MR. MORRIS: We haven't -- we
14 haven't updated from appendix B yet.

15 MR. ROLLINS: Will that version be
16 on the O drive?

17 MR. ULSH: If it is, we're in
18 trouble.

19 MR. ROLLINS: Okay.

20 MS. ROBERTSON-DEMERS: So, how can
21 we -- cleared people view that, how can that
22 be made available for those --

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1 MR. MORRIS: As I understand it,
2 we have not -- our most recent updates of the
3 SRDB to the incidents -- the SRDB contains
4 some separate documents describing incidents.

5 And most recent thing Sam Chu did was to put
6 pointers from the unclassified version of the
7 roadmap, or the less sensitive version of the
8 roadmap, to the SRDB. I don't think he did
9 that on the older, more detailed version that
10 we are not keeping up to date.

11 I think all we've done is maintain
12 the newest version that has less -- that has
13 been sanitized to some extent.

14 MR. FITZGERALD: And this does
15 encompass appendix B?

16 MR. MORRIS: It was not -- we've
17 read appendix B at this point, but we haven't
18 worked with it to the fourth templates done
19 as I understand it.

20 MS. ROBERTSON-DEMERS: Can you
21 tell us where the location of that appendix B
22 document is, where you update it?

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1 MR. ULSH: We already have.
2 Theresa Fowler in Albuquerque has it. I even
3 object to that fact, but --

4 MR. FITZGERALD: Well, we don't --
5 I guess the question is, it's just getting a
6 shipped copy as we can deal with them
7 directly.

8 MR. ULSH: Let's talk about that
9 afterwards.

10 MR. FITZGERALD: Okay.

11 MR. ULSH: Because I can give you
12 some ideas on how to get that.

13 CHAIR BEACH: Does that cover also
14 the roadmap? Is that part of this discussion
15 for Issue 6?

16 MR. ULSH: What is Issue 6?

17 CHAIR BEACH: Issue 6 is the metal
18 titrites, and there was a NIOSH action. So
19 this is -- is that part of it, or -- Because
20 there was going to be a separate roadmap that
21 you guys agreed to come up with on that.

22 MR. ULSH: How about we --

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1 CHAIR BEACH: That's fine.

2 Anything else on the -- ?

3 MR. FITZGERALD: Yes. Ron, are
4 you still on? Ron Buchanan?

5 MR. BUCHANAN: Yes, I'm here.

6 MR. FITZGERALD: Okay. Did you
7 have any questions on the claimant cases that
8 dealt with the shallow dose issue?

9 MR. BUCHANAN: Not really
10 questions. I guess at this point, SC&A needs
11 to know of the Working Group's position on
12 whether this should be pursued any further.
13 Just a quick recap here, as you recall, the
14 shallow dose was not measured in a long
15 period of time, and must be -- the film
16 showed some darkening, and then the person
17 might read it. There was no set standard and
18 no calibration for the shallow dose, which
19 would include the electrons and low-energy
20 photons, and differentiating those from the
21 deep dose.

22 And Mound did not have an accepted

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1 calibration system up -- they didn't start
2 calibrating at all until like '79. And it
3 wasn't -- still had some problems up into the
4 '88, one of the -- did not meet the DOE lab
5 requirements even then. So I guess my
6 question is, I looked -- NIOSH sent about 100
7 cases from Mound that had skin-type cancer.
8 And so I went back and looked at a few of
9 those cases, and certainly not all hundred of
10 them. And went back and looked at a few of
11 those cases, and they are using the electron
12 dose as recorded, if there was some recorded,
13 and if there's not, they're generally
14 assigning mis-dose.

15 Now in some cases, they don't use
16 shallow dose because they have a greater than
17 50 percent POC without it, so they don't use
18 it. But in some cases, they are using their
19 recorded dose if there was one there, or
20 assigning a mis-dose in some of these cases.

21 A couple of them were not -- they were
22 denied because they didn't reach the 50

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1 percent.

2 And so I guess at this point we
3 would
4 -- SC&A needs to know if the Working Group
5 wants to pursue any further on the shallow
6 dose, if that's an SEC issue, or where we
7 want to stand on that.

8 MR. FITZGERALD: And I think this
9 goes back to comments that were made that,
10 you know, certainly there's some issues
11 there, but in the final analysis, the skin
12 cancer wouldn't necessarily be an SEC
13 relevant cancer. So I don't know. I think
14 there was a little bit of a, you know,
15 whether this should be pursued, but I think
16 that is appropriately something that ought to
17 be discussed before we expend any effort
18 trying to chase all these cases down. It's
19 not a small job. You know, because it's not
20 going to lead to some resolution on SEC
21 context, maybe it's not a good use of
22 resources.

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1 MR. ULSH: Well there were a
2 couple of action items that we had. One was
3 to provide that list of cases to you for
4 which shallow dose would be relevant, and
5 that includes primarily skin cancer, but a
6 few others as well. And that list has been
7 provided.

8 The other action item, I believe,
9 was for us to provide -- I don't know, we
10 keep using the term, roadmap, but a position
11 paper, or some way how we're going to handle
12 estimated shallow doses at Mound. We have
13 not yet provided that. We will do so.
14 That's a deliverable for us for the next
15 Working Group meeting for sure.

16 CHAIR BEACH: That did not make
17 the list either, under 16.

18 MR. ULSH: Well it's somewhere
19 after that, I'm sure.

20 MEMBER ZIEMER: You took it as an
21 action.

22 CHAIR BEACH: Perfect. So I would

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1 like to defer that until you provide that
2 paper, and SC&A has a chance to maybe look at
3 some more of those claims. I don't know.
4 How does the rest of the Working Group feel
5 on that one?

6 MEMBER ZIEMER: Did you say that
7 you had provided us with a list of the cases?

8 MR. ULSH: Yes Paul, and
9 unfortunately, I neglected to include you,
10 because I forgot that you're an alternate.
11 So I will go back and get all those emails
12 that I sent out on Monday, and forward them
13 to you, as well.

14 MEMBER ZIEMER: Okay.

15 MR. ULSH: But yes, that is
16 available on the O drive in the Mound area.

17 MR. FITZGERALD: This sounds like
18 --

19 MEMBER ZIEMER: Approximately how
20 many were -- are we talking about here?

21 MR. ULSH: Well, Ron gave the
22 number of about 100. That sounds reasonable

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1 to me, especially if it was laid out so that
2 each row was not an individual person, it was
3 an individual cancer. So as you know, in a
4 lot of cases where you have a skin cancer,
5 you don't have just one. So there's numerous
6 rows associated with one particular person.
7 I'll take Ron's number at about 100.

8 MR. BUCHANAN: Yes I counted
9 there are about 108. There's a lot of lines
10 there, but like you say, Brant, there -- skin
11 cancer, someone has like four or five, or
12 six. So I think a total of 108 cases.

13 MR. FITZGERALD: Well I guess
14 responding to what you're raising, Ron, it
15 sounds like we should hold and wait for this
16 white paper, whatever it's going to be. This
17 is an illustrative sample of what's been
18 done, but it sounds like this will be a
19 little bit more definitive as to what the
20 approach is.

21 CHAIR BEACH: Bob can you hand me
22 -- so this is the list that Brant actually

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1 sent out, all five pages of the data? I
2 think 16 is the first one.

3 MR. FITZGERALD: Josie, we're
4 going to hold on, you know --

5 CHAIR BEACH: Yes. MR.
6 FITZGERALD: -- that part of it, and wait
7 until we approach it.

8 CHAIR BEACH: Okay. So the next
9 part of this is to determine what priorities
10 we need to set for future meetings, and I
11 think it might be a little too early to set a
12 future meeting, unless -- because I know
13 there's a couple things hanging. I think
14 that would be tough to do.

15 But I kind of wanted to ask the
16 Working Group what priorities they wanted to
17 have NIOSH pursue out of these items. If you
18 have a chance to maybe think about those.

19 MEMBER SCHOFIELD: Well Josie, I'm
20 kind of looking bad on that whole issue about
21 the ventilation, particularly with the new
22 structure versus the old structures there.

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1 Cave, the new cave.

2 CHAIR BEACH: Yes.

3 MEMBER SCHOFIELD: And I think that
4 needs to be looked at a little better.

5 CHAIR BEACH: Okay. Some of the
6 ones that I came up with, and we can discuss
7 them, of course, is a priority would be
8 Number 9, the -- Number 9, 14 and 15, the
9 neutrons, and then I threw in there the
10 internal/external. I know we're waiting for
11 SC&A to deliver a report on that very soon,
12 I'm understanding.

13 MR. ULSH: What about shallow
14 dose, where does that fit into your priority?

15 CHAIR BEACH: Well, that's up for
16 discussion. I just didn't -- I know we have
17 a lot of matrix items out there, and you had
18 asked at the last meeting to which ones we
19 wanted you to concentrate on. So I think you
20 saw my list. They're all high.

21 MR. ULSH: Yes.

22 CHAIR BEACH: And we can continue

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1 as we have been, unless there's other ideas.

2 MEMBER ZIEMER: Well to what
3 extent do you have to focus on a linear
4 fashion, I mean, can you give us a feel for
5 it? Is it really happening that way, or do
6 some of these inform each other so that it
7 helps to work on multiple -- you're looking
8 for certain kinds of information, and other
9 information will be there at the same time,
10 or what?

11 MR. ULSH: Not necessarily.

12 MEMBER ZIEMER: Work-wise, what
13 makes sense?

14 MR. ULSH: It's not necessarily
15 that case, Paul, where we have to finish one
16 before we do the other in a serial fashion.
17 It's not really that. It's a matter of
18 balancing priorities.

19 MEMBER ZIEMER: Yes.

20 MR. ULSH: We only have, you know,
21 so many people available to work on this, and
22 we want to focus on the things that are the

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1 most important to you, and perhaps defer the
2 other ones until later. If you tell me that
3 they're all high priority, well then, we'll
4 get the resources from somewhere, and we'll
5 jump on all of them.

6 But it's not so much the case of
7 we have to do these in serial rather than
8 parallel.

9 CHAIR BEACH: Any other ideas?

10 MEMBER CLAWSON: I want radon, the
11 lung, I guess mainly in that building and so
12 forth. I think that one can be kind of done
13 in conjunction.

14 MR. ULSH: So the radon issue is
15 high priority. And that encompasses, Brad,
16 your concerns about the different layouts of
17 the buildings.

18 MEMBER CLAWSON: Yes. And I
19 realize, you know, we're trying to
20 reconstruct a lot of stuff. I realize that
21 we may not be able to do that. It's just in
22 the earlier documents, and so forth like

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1 that. In the interviews, it portrayed that -
2 - and I don't know how else to put it. These
3 buildings were kind of bastardized together,
4 and they never knew -- they didn't understand
5 where they came out and so forth like that.
6 They were put together poorly. So you know,
7 that is a big issue for me. I'd set it as
8 high priority, but --

9 MR. ULSH: And Josie, some of the
10 other issues that were discussed today, and
11 it might be good to get into the overall
12 priority, is high or low, or --

13 CHAIR BEACH: Yes.

14 MR. ULSH: Plutonium-238 issue.

15 CHAIR BEACH: Yes.

16 MR. ULSH: And Price-Anderson Act
17 issue. I don't know, you might have
18 mentioned this earlier, the issue 17 badging
19 issue. Is that what you were talking about
20 when you said internal and external, and
21 you're expecting --

22 CHAIR BEACH: No. That was issue

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1 11, 11-12. So they just -- the report that's
2 coming out on that issue.

3 MR. ULSH: Okay. So there's
4 another one, on issue 17. If you guys have
5 some feel for what your priorities are, we
6 can focus our resources on those.

7 CHAIR BEACH: I think the neutron
8 is a high priority, too, or should be
9 considered one that needs to be addressed.

10 MR. ULSH: Okay.

11 CHAIR BEACH: Of course, those are
12 all the ones we've talked about at this time,
13 too and --

14 MR. ULSH: Neutrons and radons so
15 far is what I've heard.

16 CHAIR BEACH: Neutron, radon and
17 the ceramic, the Pu-238.

18 MR. ULSH: Okay.

19 CHAIR BEACH: I just wanted to
20 make sure we were all kind of on the --

21 MEMBER ZIEMER: Is that actually
22 the modeling part?

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1 CHAIR BEACH: Yes.

2 MEMBER ZIEMER: I think that would
3 be an important one to get a handle on.

4 CHAIR BEACH: Yes. Are you okay
5 with that?

6 MEMBER ZIEMER: Perfect.

7 CHAIR BEACH: I guess we carry on
8 then. We're a wrap. So is there anything
9 other? We can adjourn.

10 MR. KATZ: That's a wrap. So the
11 Mound Work Group is adjourned.

12 (Whereupon, the above-entitled
13 matter was adjourned at 2:22 p.m.)

14

15

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