

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL
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 LINDE CERAMICS

+ + + + +

WEDNESDAY
JULY 28, 2010

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The Work Group convened in the Frankfurt Room of the Cincinnati Airport Marriott, 2395 Progress Drive, Hebron, Kentucky, at 1:00 p.m., Genevieve Roessler, Chair, presiding.

PRESENT:

GENEVIEVE S. ROESSLER, Chair
JOSIE BEACH, Member
MICHAEL H. GIBSON, Member
JAMES E. LOCKEY, Member

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ALSO PRESENT:

TED KATZ, Designated Federal Official
ANTOINETTE BONSIGNORE, Linde petitioner*
CHRIS CRAWFORD, DCAS
MELISSA FRATELLO, Office of Sen. Gillibrand*
STUART HINNEFELD, DCAS*
EMILY HOWELL, HHS
MONICA HARRISON-MAPLES, ORAU Team*
JOHN MAURO, SC&A
LAURA MONTE, Office of Sen. Schumer*
JIM NETON, DCAS
STEVE ORTROW, SC&A
MUTTY SHARFI, ORAU Team*

*Participating via telephone

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

2 1:00 p.m.

3 MR. KATZ: Good afternoon, everyone
4 in the room and on the line. This is the
5 Advisory Board on Radiation and Worker Health,
6 the Linde Work Group. We're just getting
7 started here. We'll begin, as usual, with
8 roll call, beginning with Board members in the
9 room.

10 CHAIR ROESSLER: Gen Roessler,
11 Board member, Linde Work Group, Chair, no
12 conflicts.

13 MEMBER GIBSON: Mike Gibson, Work
14 Group member, no conflicts.

15 MEMBER BEACH: Josie Beach, Work
16 Group member, no conflicts with Linde.

17 MEMBER LOCKEY: Jim Lockey, Work
18 Group member, no conflicts.

19 MR. KATZ: And do we have any Board
20 members on the line? Okay, are NIOSH or ORAU
21 Team in the room?

22 DR. NETON: Jim Neton, NIOSH, no

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1 conflicts.

2 MR. CRAWFORD: Chris Crawford,
3 NIOSH, no conflicts.

4 MR. KATZ: NIOSH or ORAU Team on
5 the line?

6 MR. SHARFI: Mutty Sharfi, ORAU
7 Team, no conflicts.

8 MR. KATZ: Welcome, Mutty.

9 MS. HARRISON-MAPLES: Monica
10 Harrison-Maples, ORAU Team, no conflicts.

11 MR. KATZ: SC&A in the room?

12 DR. MAURO: John Mauro, SC&A, no
13 conflicts.

14 DR. OSTROW: Steve Ostrow, SC&A, no
15 conflicts.

16 MR. KATZ: SC&A on the line?

17 (No response.)

18 MR. KATZ: Okay, and federal
19 officials and contractors to the feds in the
20 room?

21 MS. HOWELL: Emily Howell, HHS.

22 MR. KATZ: And on the line?

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1 MS. MONTE: Laura Monte from
2 Senator Schumer's office.

3 MR. KATZ: I'm sorry, could you say
4 your name again, please?

5 MS. MONTE: Laura Monte from
6 Senator Schumer's office.

7 MR. KATZ: Welcome, Laura.

8 MS. MONTE: Thank you.

9 MR. KATZ: Laura Monte. Any other
10 feds or contractors to feds?

11 MS. FRATELLO: This is Melissa
12 Fratello from Senator Gillibrand's office.

13 MR. KATZ: Melissa Fratello,
14 Gillibrand, thank you. Welcome, Melissa.

15 MS. FRATELLO: Thank you.

16 MR. KATZ: Any others? My name is
17 Ted Katz. I'm the Designated Federal Official
18 of the Advisory Board, and then let's go on
19 last to members of the public.

20 There are none in the room. Are
21 there any on the line?

22 MS. BONSIGNORE: Antoinette

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1 Bonsignore, Linde petitioner.

2 MR. KATZ: Welcome, Antoinette.

3 Any other members of the public?

4 (No response.)

5 MR. KATZ: Okay. So then let me
6 just ask everyone on the line, some of you
7 probably aren't familiar with these Work Group
8 meetings, if you would mute your phones, that
9 would be great, and if you don't have a mute
10 button, *6 will work. If you use *6 to mute
11 your phone, to take it off of mute, use *6
12 again, and please, don't put the call on hold
13 at any point, but hang up and dial back in
14 because the hold will be a problem for
15 everyone else listening in. Much thanks.

16 MR. HINNEFELD: I'm sorry, this is
17 Stu Hinnefeld. I missed roll call, but I
18 wanted the folks to know I was on, as well.

19 MR. KATZ: Okay. So that's Stu
20 Hinnefeld with NIOSH ORAU, and conflict, Stu?

21 MR. HINNEFELD: None at Linde.

22 MR. KATZ: Right, thanks, and it's

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1 your agenda, Gen.

2 CHAIR ROESSLER: Okay, thank you,
3 Ted. This looks like a long agenda. I hope
4 that's deceiving. I think we can keep the
5 meeting shorter than the agenda indicates.

6 We had our last Work Group meeting
7 on April 16th, and on May 19th I made a
8 presentation to the Board, summarizing where
9 we were on Linde, that, I think, is on the
10 website now.

11 I will mention, when I talk about
12 long agenda, that Josie and I hope to leave
13 here by 3:30 p.m. this afternoon. We need to
14 go out to the Taft Building for our smart card
15 work, whatever is involved.

16 However, we're going to finish
17 what we have to do here today, and if we're
18 not done at that time, at least, I know I can
19 stay longer. But I think we have a fairly
20 short discussion.

21 As I indicated at the Board
22 meeting in May, on the Linde petition, which

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1 is SEC Petition 107, we had two -- well, I
2 called them one remaining item, but I think
3 it's really broken into two, and the first one
4 was exposures from contamination in the
5 tunnels, and the second one was with regard to
6 exposures to radon and daughters in the
7 tunnels, and we'll take those two separately.

8 On the agenda, and I apologize to
9 the people who work for DCAS, I keep calling
10 you OCAS, I haven't adjusted yet, but I had
11 indicated that the first presentation would be
12 by Chris Crawford on the NIOSH June 15th White
13 Paper, which dealt with the bounding of dose
14 from exposures to contamination in the
15 tunnels.

16 I spoke to Chris before the
17 meeting and suggested that since I thought
18 SC&A had a summarizing response to that, which
19 came in a July 16th email, and since it
20 appears that item might be fairly short, that
21 we not go over the whole NIOSH June 15th
22 paper, but go right to Steve, let Steve

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1 indicate what SC&A's response was to that item
2 as we have in the July 16th email. Will that
3 be okay, Steve?

4 DR. OSTROW: Sure.

5 CHAIR ROESSLER: Okay, then go
6 ahead.

7 DR. OSTROW: Okay, just so everyone
8 knows what we're talking about, NIOSH produced
9 a document called Evaluation of Exposure
10 Potential in Linde Ceramic Plant Utility
11 Tunnel Complex Rev. 1, June 15th, 2010. The
12 White Paper elaborated on the Rev. 0 paper of
13 March 29th with the same name that addressed
14 the issue of bounding exposures during the
15 residual period in the utility tunnels from
16 airborne and fixed contamination.

17 We reviewed the report and the
18 model that NIOSH uses now, and our conclusion
19 is, skipping ahead a little bit, that -- I'll
20 quote from my email, "SC&A finds NIOSH's
21 argument and conclusion compelling and accepts
22 that the assigned 2.3 MAC air concentration

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1 bounds any actual exposure in the tunnel."

2 So basically we accepted NIOSH's
3 paper and argument for the exposure due to
4 contamination on the walls of the tunnel, and
5 we just noted in our email, which is somewhat
6 of a separate issue, that NIOSH had been
7 assuming an occupancy factor in the tunnel of
8 two months per year and based on some
9 anecdotal evidence that we have, based on some
10 worker interviews that we did during that
11 Niagara Falls meeting and some statements we
12 got from the workers subsequent, that the two
13 months per year may be low, at least for some
14 of the workers.

15 This may not be an SEC issue,
16 though. This is -- this may be a dose
17 reconstruction type issue.

18 MEMBER LOCKEY: You said may be
19 low.

20 DR. OSTROW: It may be low because
21 some of the workers were -- well, I'll get
22 into that later, but some of the workers were

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1 saying that there was -- they were using
2 tunnels regularly to go from one building to
3 another, all the time, because the weather is
4 lousy in -- where Linde is, and so forth.

5 But we don't think that's an SEC
6 issue because NIOSH could just multiply the
7 dose rate by whatever occupancy factor that's
8 finally assumed. So we think that -- that
9 half of the tunnel exposure issue is closed,
10 just leaving open the radon issue, as the only
11 remaining issue that we see.

12 CHAIR ROESSLER: Let's wait with
13 the radon issue then and --

14 DR. OSTROW: Yes.

15 CHAIR ROESSLER: Are there any
16 question then on Steve's comments? One is
17 that they accept the bounding, the 2.3 MAC.
18 The second one is that the occupancy factor
19 would be taken care of in dose reconstruction.
20 It's not an SEC issue.

21 Is there any concern or question
22 about that?

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1 MEMBER BEACH: I just have a
2 question on the occupancy. You said it was
3 greater than two months. Did you get a sense
4 of what the time frame may have been?

5 DR. OSTROW: No, because what we
6 have is -- two months may be good, it's just
7 that you have anecdotal reports from the
8 workers that tunnels were used regularly, they
9 were going in and out. Some jobs may have
10 lasted longer than two months.

11 But at least SC&A hasn't seen any
12 really documented evidence to this. So it may
13 be greater than two months.

14 MEMBER LOCKEY: But didn't NIOSH
15 take into consideration it's an average two
16 month period?

17 DR. OSTROW: Yes.

18 MEMBER LOCKEY: So there's going to
19 be variance, which means some people are going
20 to be substantially less than that, some
21 people will be substantially higher.

22 DR. OSTROW: Yes, and this is for a

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1 seven-year period.

2 MEMBER LOCKEY: Right.

3 DR. OSTROW: So that's just a thing
4 that may have to be looked at when they're
5 actually doing the dose reconstruction.

6 DR. NETON: I think in light of the
7 interview information that came about that we
8 would be willing to entertain looking at that
9 issue again. Obviously, we're not prepared to
10 just say what that is at this point, but we do
11 agree that it's an SEC -- it's a Site Profile
12 issue nonetheless.

13 MEMBER LOCKEY: And how would you
14 go about doing that?

15 DR. NETON: We'd have to go back
16 and look at the data a little better. I mean,
17 some of the indications, I mean, it may be
18 hard to say. But I think one of the
19 interviewees actually said that people used to
20 sleep in there, and I think that was one of
21 the responses I had read. That was kind of
22 hard to put a bound on it.

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1 DR. OSTROW: Well, also Jim, that
2 was a little bit hearsay because the person
3 that we interviewed did not say that he --

4 DR. NETON: Right, right, right.

5 DR. OSTROW: -- saw this, but --

6 DR. NETON: Right, but I mean --

7 DR. OSTROW: He said that he heard
8 from one of the old-timers that people were --
9 might have been sleeping in there.

10 DR. NETON: But there was also
11 indication, I think, that people said jobs
12 took longer, like up to six months I think I
13 read in one of the interviewers.

14 So, you know, to put a bounding
15 value on it, I mean, I don't really think that
16 it's an issue to, like you say, modify the two
17 month occupancy factors or whatever would be
18 required.

19 MS. BONSIGNORE: Excuse me, this is
20 Antoinette. I was just wondering if everyone
21 could speak up a little bit. I'm having
22 trouble hearing people.

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1 DR. NETON: I'm sorry, my
2 microphone was blocked by my computer,
3 Antoinette, I'm sorry.

4 MS. BONSIGNORE: Okay.

5 DR. NETON: Is that better?

6 MS. BONSIGNORE: I have a question
7 for SC&A about the information that we
8 provided at the May Board meeting in terms of
9 exploring the level of contamination in the
10 tunnels. I was just wondering if you were
11 going to discuss that.

12 DR. OSTROW: Well, I was going to
13 get to that a little bit later. We produced a
14 White Paper on the documentation that they
15 supplied us at the meeting and after the
16 meeting. So we're going to get into that a
17 little bit later, I know Gen -- I don't know
18 if she is.

19 CHAIR ROESSLER: Yes, Antoinette,
20 can you hear me better now? I put down my
21 computer.

22 MS. BONSIGNORE: Yes, thank you,

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1 Gen. I can.

2 CHAIR ROESSLER: Okay, then I think
3 Steve is referring to a draft paper dated July
4 2010. I don't see an actual date in here, and
5 I think you addressed it in that, and we will
6 cover that item, but I have it on the agenda
7 to cover that after we get done talking about
8 the radon issue.

9 MS. BONSIGNORE: Actually, Gen, I'm
10 talking about material that we supplied at the
11 -- regarding exposure levels, some reference
12 material that I had given Steve originally
13 that was from a 1981 New York State hearing.
14 Steve, do you recall that?

15 DR. OSTROW: Yes, that's the large
16 New York State report that dealt with Love
17 Canal and the contamination of the whole area;
18 that's the one you're talking about?

19 MS. BONSIGNORE: Right, and you're
20 saying there is a July 16th White Paper on
21 this?

22 DR. OSTROW: Yes, the July 16th

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1 White Paper has been distributed internally
2 and to the Work Group and NIOSH and so forth,
3 but it's still Privacy Act protected.

4 MS. BONSIGNORE: Okay, so I'm just
5 -- so I just wanted to make sure that I'm not
6 -- that I didn't -- so I haven't received this
7 yet?

8 DR. OSTROW: No, because it's
9 still, you know, Privacy Act protected right
10 now.

11 MS. BONSIGNORE: Okay, and I just
12 had one additional question about the exposure
13 issue. Is everyone basing exposure -- basing
14 exposure issues solely on the 2002 Army Corps
15 of Engineers tunnel data?

16 DR. OSTROW: Yes, I think that's --

17 DR. NETON: Yes.

18 DR. OSTROW: It's 2001, I think,
19 the --

20 DR. NETON: The measurements are
21 2001, the report was issued 2002.

22 DR. OSTROW: 2002, yes.

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1 MS. BONSIGNORE: Okay, so, it -- so
2 all of the exposure estimates that we're
3 talking about here today are based solely on
4 that data?

5 DR. NETON: Correct.

6 MS. BONSIGNORE: So you have no
7 other data with respect to radiation levels in
8 the tunnels beyond that study from 2001?

9 DR. NETON: Well, Chris Crawford
10 can correct me if I'm wrong, but I believe
11 there were some limited number -- value
12 measurements taken in 1976.

13 MR. CRAWFORD: That's correct.

14 DR. NETON: And they were limited
15 to, I think, areas near what, Building 14 or
16 something like that?

17 MR. CRAWFORD: Fourteen and 30, I
18 think.

19 DR. NETON: Thirty.

20 MS. BONSIGNORE: Okay, but nothing
21 else with respect to actual data from inside
22 the tunnels?

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1 DR. NETON: No.

2 MS. BONSIGNORE: Okay. So, okay, I
3 just wanted to verify that you -- you don't
4 actually have any data from inside the tunnels
5 beyond the 2001 Army Corps of Engineers
6 report.

7 MR. CRAWFORD: The '76 data points
8 were inside the tunnels.

9 MS. BONSIGNORE: Seventy-six?

10 MR. CRAWFORD: Yes.

11 MS. BONSIGNORE: Okay. So you're
12 basing it on 1976 data and 2002 data?

13 DR. NETON: 2001 surveys.

14 MR. CRAWFORD: Yes.

15 CHAIR ROESSLER: Antoinette, do you
16 have new information? We had covered this in
17 quite a bit of detail in the past. Is there
18 something new that you wish to provide for us?

19 MS. BONSIGNORE: No, I'm just
20 trying to get an idea of what exactly
21 everybody is basing this dose model on. I
22 just want to be sure that I've got this right.

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1 CHAIR ROESSLER: I think if you go
2 back through the documentation, you'll find
3 all of this covered in that.

4 MS. BONSIGNORE: Yes, I understand
5 that, Gen, but I just wanted to get it on the
6 record here today that this is what everybody
7 is basing it on.

8 CHAIR ROESSLER: Okay, all right.
9 Thank you. Okay. So I think then we're up to
10 the next item on the agenda then, which is the
11 second item we were going to cover with regard
12 to the tunnels, was the bounding of dose from
13 exposures to radon and daughters, and I have
14 down here, in and outside the tunnels and
15 buildings, as available.

16 And I think on this then, we
17 should go to Chris for an update on what NIOSH
18 has done.

19 MR. CRAWFORD: Unfortunately, the
20 radon model is not yet ready for publication.
21 We don't even have a copy of it from our
22 contractors.

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1 What I could do is describe the
2 general thrust of the models that are being
3 developed for the radon picture in the
4 tunnels.

5 We're looking at two major sources
6 of radon in the tunnels. The first is the
7 surface contamination, which is based on the
8 `76 and 2001 measurements. That's fairly
9 straightforward.

10 The other is a little more
11 complicated, and that is the radon generated
12 in the soils, the contaminated soils around
13 the tunnels, and the diffusion then from the
14 soils into the tunnels, through the concrete
15 walls, and that's primarily the piece that
16 we're working on right now.

17 We have concrete diffusion
18 coefficients that were taken by, it was either
19 the `76 or `81/'82 surveys, I forget which.
20 But we have some measurements, not of radon
21 directly, but of diffusion through concrete,
22 in the buildings, and that's same-era

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1 concrete, so we figured it was better than
2 anything else we could base it on.

3 We also have some idea of the
4 penetration of the contaminants in the soils.

5 There was some surface contaminants in the
6 soils and over the years, they've moved
7 downward slowly through the soils, but -- and
8 that's actually pretty well documented in the
9 June 15th paper we've just been talking about.

10 So those are the things we're
11 looking at. If there are any questions about
12 that, I can try to answer them, but we don't
13 have results.

14 CHAIR ROESSLER: I guess the main
15 question at this point would be where do we go
16 with this. It was -- our Work Group had hoped
17 to come to a conclusion/resolution on the full
18 Linde petition today and make a recommendation
19 to the Board in Idaho Falls and take a vote,
20 and I think, trying to keep in mind the Linde
21 workers who are wanting us to come to a
22 conclusion.

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1 I'm wondering if there is some way
2 that we can have a discussion here today that
3 would resolve it, or perhaps NIOSH has some
4 advice here as to why that wouldn't be
5 possible, why we would need to pursue this
6 somewhat further?

7 MR. CRAWFORD: Well, the main
8 thing, Gen, I think is that the -- I think the
9 radon issue is the sole remaining issue that
10 we haven't thoroughly discussed and more or
11 less agreed upon amongst all the contractors.

12 So it's, you might say, the
13 critical thing at the moment. It may not be
14 the greatest exposure path, but nonetheless,
15 it has to be dealt with, I would think. This
16 is, of course, the Board's decision, and the
17 Working Group's decision.

18 MS. BONSIGNORE: Chris, I have a
19 question about thorium exposure from the 2002
20 Army Corps report.

21 CHAIR ROESSLER: I think,
22 Antoinette, I think maybe we should focus on

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1 this radon discussion first, and then we'll
2 come back to that.

3 MS. BONSIGNORE: Okay, I just -- I
4 just want to make sure I'm getting all my
5 questions in because sometimes it's difficult
6 for me to --

7 CHAIR ROESSLER: I know, just --

8 MS. BONSIGNORE: -- understand
9 what's going on.

10 CHAIR ROESSLER: Before we close,
11 just remind me, we'll come back to that. But
12 I think right now, the -- we have a critical
13 decision, in that we need to know whether
14 we're going to try and bring this to closure
15 today. It appears to me that we're not going
16 to be able to.

17 I guess the first question I'd ask
18 for NIOSH is what are your plans for pursuing
19 this further and what would the time line be?
20 What --if you could give us a little
21 indication about what you'd be doing.

22 DR. NETON: Right, I think I can

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1 maybe speak to that, slightly.

2 CHAIR ROESSLER: You might need to
3 speak up.

4 DR. NETON: Yes, microphone right
5 here in front of me.

6 As Chris indicated, the radon
7 model or the radon evaluation from the
8 contaminated surfaces within the tunnels is a
9 very straightforward calculation, and we
10 believe those numbers are fairly solid, and
11 our initial cut at that analysis was to coat
12 the inside surface of the tunnels with the
13 maximum contamination level that was found
14 anywhere within the entire tunnel complex, and
15 assume it was uniformly contaminated.

16 That, of course, is a large
17 overestimate, and we don't have this report in
18 front of us, but I'm prepared to at least say
19 that it was around 18 picocuries per liter, as
20 the result of that number. Now that, keep in
21 mind, is an overestimate because not all the
22 tunnels -- this is the worst case scenario,

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1 assuming that they were all uniformly
2 contaminated. So I think we're on pretty
3 solid grounds with that calculation.

4 The diffusion calculation, though,
5 of the radon that enters the tunnels from the
6 contamination of the soil is a little more
7 problematic, in the sense that you have a
8 tunnel that is buried below ground with some -
9 - envision a cap of contamination on top of
10 it, whether that cap is two or three feet, you
11 know, it's actually a little more complicated
12 than that.

13 I think the tunnels are fairly
14 close to the surface, but the surface
15 contamination only migrates down -- Chris,
16 help me out here, maybe three feet or
17 something to that extent.

18 MR. CRAWFORD: It's a -- I believe
19 it's about -- was it .03 meters, Monica will
20 know this, per year? It's either .3 or .03
21 meters per year, but that's the water
22 infiltration. Uranium moves 47 times slower

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1 than that.

2 DR. NETON: Right.

3 MR. CRAWFORD: And other
4 contaminants, radium in particular, move even
5 slower than that.

6 DR. NETON: I thought they had -- I
7 thought we had core samples, though, Chris, do
8 we not?

9 MR. CRAWFORD: We do.

10 DR. NETON: That show that --

11 MR. CRAWFORD: And all the samples
12 show that penetration is -- ranges at the
13 deepest, from three to five feet.

14 DR. NETON: Right. So that's my
15 point is then you have to model either that or
16 this -- a first cut that we took was the
17 model, assuming that the worst case
18 contamination is completely invalid, and we
19 believe that number to be an implausibly high
20 value to bound this.

21 So we need to go back and revisit
22 the calculation and come up with what we

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1 believe to be a more realistic value. But I
2 guess I'd be interested in hearing feedback
3 from the Working Group as to the value they
4 place in this type of an analysis.

5 I mean, this would be the type of
6 analysis we're doing, a diffusion coefficient-
7 type model. We're using the RESRAD model, at
8 this point, to my knowledge, and you know, if
9 there's any feedback we can get before we
10 complete the calculation, that would be
11 helpful.

12 But the actual mechanics of doing
13 the calculation are there. I mean, we can do
14 them and it shouldn't take that long to
15 complete the analysis.

16 CHAIR ROESSLER: Does anybody else
17 on the Work Group or John, anybody have any
18 comments?

19 DR. MAURO: Yes -- the core, so,
20 there is some residual radium --

21 DR. NETON: Right.

22 DR. MAURO: -- in the soil,

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1 associated with operations, in the top, and
2 the idea being that it's moving gradually,
3 vertically down. What kind of concentrations
4 of radium are we talking about?

5 DR. NETON: I think the worst case
6 I saw was 18 picocuries per gram.

7 DR. MAURO: Okay. Now --

8 DR. NETON: But it's much less than
9 that in many locations.

10 DR. NETON: Now this may be more --

11 MR. SHARFI: Jim, let me clarify
12 it. The 18 -- this is Mutty Sharfi. The 18
13 is the 95th percentile; it's not the highest
14 amount.

15 DR. NETON: Okay, thanks, Mutty,
16 for that clarification.

17 DR. MAURO: But it's on the --

18 DR. NETON: But it's on that order.

19 DR. MAURO: But it's on that order.

20 I just wanted to get a feel for that number.

21 Now this may be more of a
22 regulatory question that I have. Now, okay,

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1 the levels of radon that are in -- were in and
2 are in that tunnel, are a combination of radon
3 that came from residual radium in the soil,
4 from residual radium inside the coating of the
5 tunnel and from natural radium that's in soil
6 all over.

7 DR. NETON: Right.

8 DR. MAURO: Now with respect to
9 dose reconstruction, it was my understanding
10 that if you can't really distinguish between
11 how much radon, what radon is doing to the
12 facility, and what is natural, you sort of
13 have no choice but to assume that even the
14 natural radium in the soil might be
15 contributing and should be included in the
16 dose reconstruction. I'm not sure.

17 DR. NETON: Well, what you say is
18 true, but I think that the operative words are
19 "can't distinguish." I mean, we know what the
20 levels of residual contamination are, from the
21 operations.

22 So we would only include those in

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1 the model. We would not be bound to include,
2 essentially, what would be about one picocurie
3 per liter radium in all of the soil
4 surrounding the tunnels.

5 DR. MAURO: Yes, right. Okay, so
6 if there was actually some measurements found
7 of radon concentrations in the tunnel, either
8 old ones or new ones, part of the FUSRAP
9 program, there really wouldn't -- what that
10 would do is if it was based solely on that, as
11 --

12 DR. NETON: I know where you're
13 going.

14 DR. MAURO: So then under those
15 circumstances, if you only had that to base it
16 on, then you might be in a situation where
17 you'd have to -- even though that might have
18 been predominantly from natural, since you
19 could not distinguish how much of it was
20 natural versus residual, then you'd have no
21 choice but to use the --

22 DR. NETON: I would agree, then we

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1 would accept the measured value --

2 DR. MAURO: Right.

3 DR. NETON: -- over a model value
4 in the context, yes.

5 DR. MAURO: That's right. Okay.
6 Now, when you -- this is just from my
7 experience of using RESRAD and doing these
8 kinds of calculations for homes, the rate at
9 which radon enters a given structure in the
10 soil is highly variable depending on the kinds
11 of soil, its radium content, the lithography,
12 is it wet, is it dry, and the structure
13 itself, the foundation, the cracks.

14 Now one of my concerns, and I'm
15 sure you're aware of this, is that applying a
16 model built into it will be certain diffusion
17 coefficients. There are default values that
18 are -- that RESRAD uses for homes.

19 Are you using RESRAD-BUILD or
20 RESRAD RESRAD? Are you using it, or are you
21 just running your own diffusion calculations?

22 DR. NETON: Mutty could answer that

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1 question.

2 MR. SHARFI: The contamination
3 found with RESRAD-BUILD, the spread, the radon
4 from soils is used by RESRAD.

5 DR. MAURO: Okay, good. I'm more
6 familiar with RESRAD, the regular RESRAD. So
7 in my experience, in using the regular RESRAD
8 is, you know -- it's very good, for the
9 purpose of predicting typical concentrations
10 that might be in a home.

11 But if you were to apply it to a
12 particular home and say, "Okay, I'm going to
13 see if I can predict how much is in my home,"
14 a good example would be, what you would find
15 out is that there are so many variables at
16 play, regarding the home, the delta P between
17 the home and the time of year and then that --
18 on a specific case, it's tough to use RESRAD
19 and feel as if you've got a realistic
20 estimate.

21 However, I would also say that if
22 you select your parameters correctly, you

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1 could place a bound on it -- you might be able
2 to, because we know that, you know -- for
3 example, in theory, let's say, you're really
4 not sure, because you have cracks in the
5 concrete, you've got a delta P created by the
6 fan that's evacuating this, which creates a
7 way which is sucking that -- in theory, one
8 could argue, if you've got an idea of what the
9 profile is of the radium around the tunnel,
10 maybe it's just over the top part, and the
11 thickness of that --

12 I do know that we've done some
13 calculations that show -- and it's in the
14 literature, that the radon that's produced
15 from the radium in the soil, and this is
16 natural now, it's going to start diffusing and
17 usually, five meters away, the radon -- the
18 radon is produced. It enters the pore space
19 and it starts to move, okay, from the delta P,
20 it's moving.

21 If it's more than five meters
22 away, it's going to decay before it reaches

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1 and it becomes one of the particles, and
2 that's it, it's over. If it's inside five
3 meters -- now, this is like a rule of thumb,
4 you know, so, if you get a scale, you've got a
5 sense of what we're doing with it.

6 Now, in theory, and thinking
7 through the problem, in theory, if you -- you
8 know, you really don't know what the diffusion
9 coefficient is. You may know the diffusion
10 coefficient across concrete, theoretically,
11 but that's not where the radon comes through
12 it. The radon comes through the cracks and
13 fissures associated with a specific foundation
14 or, in this case, the wall -- the concrete
15 walls.

16 So -- and you really can't predict
17 that. So one could almost argue that all of
18 the radon that's produced from the radium
19 associated with residual contamination within
20 a certain distance from the tunnel could
21 theoretically find its way into the tunnel and
22 be drawn in, and this sort of like, almost

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1 avoids the question of what's the diffusion
2 coefficient because you -- basically, I'm
3 giving you a preview because I understand
4 conceptually how you're coming at the problem,
5 and there are -- if you do use a particular
6 diffusion coefficient, what's going to happen
7 is that's going to be the place where you're
8 going to be soft, unless you pick a diffusion
9 coefficient that you could show, even under
10 worse conditions, where there were massive
11 cracks and large delta Ps across the barrier,
12 you don't really -- it doesn't come up and
13 it's rarely greater than that.

14 Now I'm not aware of literature on
15 that subject; there may be. So what I'm
16 basically saying, if you are going to use a
17 diffusion coefficient, to get the rate at
18 which the flux, the radon is entering the
19 tunnel, that's going to be the place where
20 you're most vulnerable.

21 If you assume it's all of the
22 radon within some distance, that's -- as it's

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1 produced the way you did for the radium inside
2 the tunnel --

3 DR. NETON: Hundred percent --

4 DR. MAURO: Hundred -- now, that
5 would be bounding. Now, that may come up -- I
6 don't know what number you're going to come up
7 with, and it may not be -- then the
8 plausibility issues start to come in.

9 So, I guess what I'm doing is, I'm
10 almost putting myself in your shoes, saying
11 that, you know, if I was challenged with this
12 question, these are the things that I would be
13 concerned about, and I don't know if that's
14 helpful to you.

15 MEMBER LOCKEY: Is the tunnel --
16 are the tunnels under negative pressure, do
17 you know?

18 DR. NETON: Well, there's
19 ventilation from what we -- there's a .1 air
20 changes per hour in the tunnel, at least by
21 the Army Corps of Engineers' estimate in 2002.

22 It's pretty low. So, there is some

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1 ventilation to the tunnel, they use a suction
2 fan.

3 DR. MAURO: That's a very low air
4 terminal.

5 DR. NETON: Very low air terminal,
6 yes.

7 DR. MAURO: But it is a -- see, I
8 wouldn't have -- when I first -- the last time
9 we met on this, we found out about this. I
10 said, one of the key issues there are going to
11 be is, is the air that's moving through the
12 tunnel, is that pressure, in other words,
13 coming pushing from outside ambient into the
14 tunnel, and pressurizing the tunnel?

15 Quite frankly, in my opinion, if
16 that was the case, the issue goes away.

17 However, if it's a vent exhaust
18 and you -- which goes down --

19 MEMBER LOCKEY: Explain it to me.
20 I don't understand.

21 DR. MAURO: Well, if you were to
22 take an ambient -- like in this room, perfect

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1 example. Let's say we want to move air into
2 this room. Okay, there's one of two ways we
3 can do this.

4 We can have a fan over there,
5 okay, that's blowing outside air into this
6 room, and there's a -- and therefore, is a
7 positive pressure between inside this room and
8 outside the room. Okay, so, we have a
9 positive pressure, and let's say there's some
10 soil also, that's in there. Starting at that
11 level, there is dirt, but you don't have a
12 positive measure.

13 So, therefore, the radon is not
14 going to diffuse in; it can't. The positive
15 pressure is keeping the radon out.

16 MEMBER LOCKEY: So, if there's air
17 pushing -- if there's a fan pushing air into
18 the tunnel, there's positive pressure?

19 DR. MAURO: Positive pressure
20 relative to the outside.

21 MEMBER LOCKEY: If it's sucking
22 out, natural ventilation, it's negative. So,

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1 do we know?

2 DR. NETON: We believe it's a
3 suction fan, but --

4 MEMBER LOCKEY: It's a suction fan?

5 DR. NETON: But what John described
6 in his analysis, which I kind of like, as the
7 five-meter rule, I think it still applies.

8 DR. MAURO: A little work has to be
9 done, because that five meter is a rule of
10 thumb that we use. We basically model
11 diffusion in the soil, and this -- and the
12 original work is done by Vern Rogers &
13 Associates, many years ago. He was an expert
14 on radon. You know Vern.

15 But in any event, but the five
16 meter gives you a sense of the magnitude. Of
17 course, there is also -- and there's some
18 discussion, I have a couple of textbooks on
19 the subject, where of course, the porosity,
20 the moisture content, all affects the
21 distance.

22 But there is some distance, where

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1 it's just, that's it, you know, it can't go
2 much further.

3 DR. NETON: The diffusion rate of
4 radon through various matrices is fairly well
5 established.

6 DR. MAURO: Yes.

7 DR. NETON: Mutty, could you just
8 refresh -- I'm not sure, when you did these
9 RESRAD calculations for the tunnels, you did
10 assume that there was a concrete shell in
11 there, did you not?

12 MR. SHARFI: I don't think -- well,
13 I think yes, there's a default of a concrete
14 thickness, yes.

15 DR. NETON: Okay, because at one
16 time, we had talked about just ignoring the
17 concrete itself and just putting the person
18 sort of in the middle of a hole in the ground,
19 with no, you know, concrete there, to have to
20 worry about the cracks and that sort of thing,
21 and these sort of scope and bounding-type
22 calculations.

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1 But anyway, you get the sense of
2 where we are. This is not a simple
3 calculation. We want to make sure that we do
4 it right, but I think it is doable, and --

5 MEMBER BEACH: So, I have a
6 question. Based on some conversation that I
7 heard before the meeting, and then looking at
8 the 2001 Army Corps of Engineers' tunnel
9 contamination survey, could we go back into
10 the tunnels now, and do surveys for both
11 contamination and radon?

12 DR. NETON: That's a very good
13 question. My understanding is that at least
14 some of the tunnels are still there, not all,
15 but some, and I think they're largely in the
16 same condition that they were -- in existence,
17 as they were in 2001.

18 So, if one were able to obtain
19 permission from the current owners of the
20 facility or operators of the facility, it's
21 possible one could do that.

22 MEMBER BEACH: Well, and then the

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1 other part --

2 DR. NETON: It would obviate the
3 need to do -- well, it would either validate
4 the models or obviate the need for models, it
5 depends on how you want to look at that, what
6 the measurements are worth.

7 MEMBER BEACH: Right, and the other
8 part of that is, until you're ready with your
9 report, SC&A really can't weigh in on what
10 they think about the report.

11 CHAIR ROESSLER: So, I think we've
12 reached a point where we need to instruct
13 NIOSH to do more work, but I'd like to pick up
14 on what Josie just said, and ask, perhaps SC&A
15 or other Work Group members; what do you think
16 of the idea to explore the possibility of
17 making some current measurements? Would that
18 -- in your mind, would that help resolve the
19 issue?

20 DR. MAURO: In my mind, absolutely.

21 CHAIR ROESSLER: Steve, do you have

22 --

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1 DR. OSTROW: But I agree, too. If
2 it's done -- we could do radon measurements in
3 the tunnels, do them carefully, get some
4 values and you'd have to be a little bit
5 conscious of what time of year it is and some
6 other things, but --

7 CHAIR ROESSLER: That's what --

8 DR. OSTROW: -- whether it's
9 raining or not raining.

10 DR. NETON: Yes, I think you could
11 do an electrets-type measurement, leave it
12 there for a certain period of time.

13 DR. OSTROW: Yes, but it's doable.

14 CHAIR ROESSLER: That's the -- your
15 mention of time of the year was a thought that
16 occurred to me, as if -- if we're to do this
17 in an efficient manner, then you'd want to
18 explore the possibility of doing it and going
19 ahead and put the electrets out there, and
20 they stay out for how long?

21 DR. NETON: It depends on what
22 sensitivity you want.

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1 CHAIR ROESSLER: How many days?

2 DR. NETON: But 30 days would
3 certainly be a generous amount of time. I
4 mean, you could probably do a week's worth of
5 measurements, in my opinion.

6 I'm not sure that an underground
7 tunnel is as effective at seasonal variations
8 as --

9 DR. MAURO: The seasonal variation
10 that occurs in homes has to do with the fact
11 that in the winter, you're home, you have the
12 delta-P, you have a smoke screen, what they
13 call the chimney effect, because the house is
14 warm, and the air is leaving and you're going
15 to suck it in.

16 And so, in this case though, we
17 don't really have that, but what we do have is
18 moisture content.

19 Now, it may turn out -- I mean, I
20 would say that the moisture content in the
21 soil might vary from time to time because of
22 rain, and that might affect it.

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1 CHAIR ROESSLER: Tell us now, if
2 the soil is very wet, what does that do to the
3 radon?

4 DR. MAURO: Well, it's an
5 interesting problem. There's actually an
6 article I read about it.

7 Picture the radium is in a little
8 tiny particle of soil, you know, the size of -
9 - you know, grain size. Okay, the radium is
10 in there, okay and usually the radium that's a
11 concern is the radium that's close to the edge
12 and it decays, okay.

13 When the radium decays, it
14 recoils, but it's not radium anymore when it
15 decays. It's now radon, and what it does is,
16 it sort of breaks away from the little soil
17 particle, okay.

18 Now, stay with me. So, you can
19 always picture this on a microscopic level.
20 Now the radon atom has just left the particle
21 and it's entered the porous space that's
22 between that particle and the next particle.

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1 Now, if there is water there, all
2 right, if there is water there, it hits the
3 water and it slows down and it stays in the
4 space. If there is no water there, it goes
5 right by and crashes into the next particle
6 and buries itself in the particles.

7 CHAIR ROESSLER: So, do you know
8 what kind of factor there is --

9 DR. MAURO: Well, there's a whole
10 article on this. Now, what happens is -- no,
11 now, what happens is though, if it stops in
12 the water, okay, now, it's in the place where
13 it could move, because when it's in the
14 particle, it's not going anywhere. It's in
15 the -- if it's in the porous space, it could
16 move.

17 But if there is water in the
18 porous space, it slows down the radium.

19 So, you've got these off-setting
20 factors. It's nothing -- unfortunately,
21 nothing is simple with these things.

22 So, it's probably -- what I would

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1 say is, if you could get a long enough sample,
2 a month would be great, where you capture the
3 reality of the situation, where you're going
4 to get, over that kind of time period, such a
5 time period is when, maybe it's moist, time
6 periods when it's not moist, and you're
7 basically effectively getting a good
8 representation for a year, let's say, over the
9 course of a year, I mean, winter, summer, you
10 know, freezing.

11 Unfortunately, you've got these --
12 there is always going to be some questions.
13 You can't escape that.

14 DR. NETON: But it seems that there
15 is bounds you could put even on that
16 measurement and assume, for instance, the
17 factor -- even a factor of two and --

18 DR. MAURO: Yes, and there's
19 literature on that, too.

20 DR. NETON: Yes, and you could
21 bound --

22 DR. MAURO: Right.

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1 DR. NETON: You could say, okay, I
2 have a value X. I don't know --

3 DR. MAURO: And typically --

4 DR. NETON: -- the ideal
5 conditions.

6 DR. MAURO: But at other times of
7 the year, it could be -- right, so you could --
8 - I think -- right, you get an anchor.

9 DR. NETON: Right.

10 DR. MAURO: So, you'll have your
11 anchor and from there you can --

12 DR. NETON: Right, an empirical
13 measurement and you can --

14 DR. MAURO: And you could work with
15 that, yes, and so, the answer -- I guess
16 that's the way I see it. I think that you --
17 you know, taking the -- the longer the
18 measurement, of course, the better, but a
19 week, a month, once you have that, that's a --
20 and you've taken it enough -- you know, by the
21 way, you do want that negative pressure. I
22 don't know if the fans still work.

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1 DR. NETON: I don't know.

2 DR. MAURO: But you could -- if you
3 know what it was, you could make that pressure
4 happen. In other words, the fans aren't
5 working, you put a fan, you know, you want to
6 draw down. If you don't draw down, then
7 you're not really getting, you know -- you've
8 got to get -- you want to get that delta-P.

9 DR. NETON: I'm not sure there's
10 off site -- there's no ventilation; does that
11 not offset the negative pressure? I mean, you
12 know, you've got a situation where let's say,
13 there's no ventilation -- I mean, you could
14 say there's no ventilation there at all. This
15 is worst-case conditions, I think, that you --
16 you know, you are changing over .1 volumes per
17 hour.

18 DR. MAURO: If there is -- I
19 thought the .1 was due to the ventilation?

20 DR. NETON: It is, I'm saying, but
21 it's all the --

22 DR. MAURO: Right, but then there's

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1 no motive force to draw it in there.

2 DR. NETON: Right.

3 DR. MAURO: So, you've got this --
4 again, it's offsetting, you know. You're
5 right, if you're blowing air through there,
6 you know. But again, you'd want to reproduce
7 the conditions that existed over that time
8 period, and then, I've got to tell you, in a
9 home, you don't know -- you know, when the
10 delta-P is there because of the chimney
11 effect, that's when you get the radon build-up
12 in the home.

13 So, you would think that the air
14 turnover rate is going to help you, but it
15 doesn't. It's causing your problem. It's
16 sucking that air from around -- from the
17 basement in.

18 Without that delta-P -- in fact,
19 that's -- you know, you lose that delta-P,
20 you're not going to have a radon problem.

21 DR. NETON: What kind of delta-P
22 are you going to generate with a .1 air

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1 change?

2 DR. MAURO: I don't know.

3 DR. NETON: It can't be that much.

4 DR. MAURO: I don't know.

5 MEMBER LOCKEY: I mean, it's going
6 to change -- that delta-P is going to change,
7 based on the length of the tunnel and the
8 exhaust fan. It's going to be higher near the
9 exhaust fan, and very low at the entrance.

10 DR. MAURO: Right, but as Jim
11 rightly points out, that -- the moving air --
12 you know, but you would -- what are you
13 moving? You're moving the air that's being
14 sucked in from the soil, or you're moving air
15 that's also coming in from outside.

16 DR. NETON: Well, see, that's what
17 we've got to know. I don't think it's -- it's
18 not a full negative pressure. I've got to
19 believe that there are openings for make-up
20 air to come in there, otherwise, I don't know
21 why you would ventilate something and keep it
22 under --

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1 DR. MAURO: Well, you just -- I
2 mean --

3 DR. NETON: I think we're content
4 to make a negative pressure --

5 MR. CRAWFORD: Well, we know there
6 are stairways going up into the various
7 buildings, or were, some of them are gone, and
8 manways up and down. I doubt -- we assume
9 that it's pretty open, in other words.

10 DR. MAURO: I've got to say, I
11 would like to see with and without. I mean,
12 I'm making it a bit complicated, I'm sorry --

13 CHAIR ROESSLER: With and without?

14 DR. MAURO: With and without the
15 fan on.

16 DR. NETON: I think it's all in the
17 --

18 MR. CRAWFORD: It would be nice to
19 have --

20 DR. MAURO: And then we publish a
21 paper.

22 DR. NETON: I think it's in

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1 agreement; a measurement would be good. You
2 know, how one would qualify the data that were
3 obtained is, you know.

4 MEMBER LOCKEY: How would we use
5 that data then? How would we use that data?

6 DR. MAURO: Well, now, you've got
7 the actual concentrations. I've got to tell
8 you, now, you have a choice to make, right,
9 really, what we've got here.

10 Now we've got some real
11 measurements. The real measurements that we
12 have, we could say with a degree of
13 confidence, that level that we're looking at,
14 with the uncertainty, taking in those, the
15 factors that we talked about, captures what we
16 believe to be a realistic estimate of what has
17 been in that tunnel, probably for quite some
18 time.

19 Well, where the measurements were
20 made --

21 CHAIR ROESSLER: Representative of
22 that.

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1 DR. MAURO: Because now, the degree
2 to which it's representative of every location
3 of the tunnel, over the entire time period, I
4 think that -- I don't want -- I can't really
5 speculate on that.

6 But I suspect that most of the
7 activity that's in the tunnel is from
8 naturally occurring radium in the soil that's
9 surrounding the tunnel, and so, whatever
10 measurements are just made probably reflects
11 the radon levels in the tunnel, due to
12 naturally occurring radium in the soil around
13 that tunnel, which probably means that that
14 concentration is from -- probably a
15 concentration that's been there from 1953.

16 You know, because in terms of the
17 -- now, I'm just thinking out loud now.

18 DR. NETON: Well, let me help you
19 out. I mean, the radium is moving downward in
20 the soil columns, over time. So, in 1953, it
21 was on top.

22 DR. MAURO: Right.

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1 DR. NETON: Or very close to the
2 top, and so, it's only getting worse over
3 time, as it's migrating into the soil -- into
4 the water, in the soil column.

5 DR. MAURO: But now, what do you --
6 so, let's just for a minute, say as a thought
7 problem.

8 Okay, so, now, we've got a
9 measurement and let's say we can make a case
10 that you know, with uncertainty on it, that
11 that measurement reflects the concentration of
12 radon that was in the tunnel over -- since
13 1953.

14 CHAIR ROESSLER: Why do you say
15 1953?

16 DR. MAURO: Well, that's the
17 starting point of the time period.

18 DR. NETON: That's the time period.

19 CHAIR ROESSLER: When were the
20 tunnels actually built?

21 DR. NETON: They were there during
22 the covered period. So, I don't know if they

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1 existed --

2 CHAIR ROESSLER: So, it would cover
3 this -- it would take care of this --

4 DR. NETON: It's somewhere between
5 1942 and 1953, I mean.

6 CHAIR ROESSLER: Okay, yes.

7 DR. MAURO: All right, now, we have
8 that number, and I'm just -- let's just
9 postulate for a moment, that that -- what we --
10 - one feels confident that that number that --
11 with its uncertainty, is -- captures the range
12 of possible concentrations, the plausible
13 concentrations of radon that actually were --
14 occurred throughout those tunnels, you know,
15 since 1953, the time period of interest.

16 All right, now, in addition to
17 that way of getting at the problem, you have
18 the model.

19 DR. NETON: Right.

20 DR. MAURO: All right, and then
21 let's say you run your model and you also will
22 come up with an estimate of what the

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1 concentrations were, and now, you have more
2 information.

3 Now, how you run the model, I
4 don't know. We talked about that before,
5 about the cracks and the diffusion and then,
6 you run your model, and so what we really have
7 here is two ways of coming at the problem.

8 One would be one where you're
9 trying to predict the radon concentrations in
10 the tunnel, that were due only to the residual
11 radioactivity associated with operations, and
12 the other would be predicting or measuring the
13 radon concentrations in the tunnel, actually
14 observed, which is a combination of the radon
15 that's there from both natural and residual,
16 and now, you have -- let's say, today, you're
17 sitting here and we have all this information
18 in front of us.

19 You know, would that provide
20 enough information to place a plausible upper
21 bound on the concentrations that were
22 experienced by the people who were in the

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1 tunnel from 53 on? That's -- you know, that
2 would be -- provide the data, the evidence
3 that you could place a plausible upper bound
4 on that.

5 CHAIR ROESSLER: Well, that
6 question is directed toward you and Steve, I
7 think, and the other members of the Work
8 Group. Is this something that will help
9 resolve this issue?

10 MEMBER LOCKEY: Did we get -- if
11 you and NIOSH say, yes, if we do this, and
12 we're confident we could put bounds on this,
13 is that going to be acceptable to the Work
14 Group?

15 DR. MAURO: Right.

16 MEMBER LOCKEY: If not, then the
17 Work Group --

18 DR. MAURO: I think Bill feels
19 probably about the same about this. Bill is
20 one of the world's experts on radon, and I
21 mean, we could -- SC&A will certainly take --
22 come up with something.

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1 We will deliver -- once all of
2 this is done and there's a White Paper, a
3 report, we will evaluate it and we'll take a
4 position on it, as to whether we believe that
5 this is scientifically sound, claimant-
6 favorable based on the assumptions, the
7 measurements made, what was done, the data, et
8 cetera. We will take -- we will have a
9 position.

10 Now, keep in mind that the problem
11 is, it says that there is going to be
12 variability in time and in location.

13 Now, as far as people, you know,
14 there are people in the tunnel now. We're
15 going to run into a problem that says, well,
16 the people that are in the tunnel, they're not
17 always in the same place in the tunnel all the
18 time.

19 So, the very fact that you have a
20 number that says, we're going to make --
21 assume that this number, whatever, is picked
22 with some certainty, reflects what the typical

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1 exposures might have been experienced by
2 people over those several years, sort of
3 walking around the tunnel.

4 So, they're going to experience an
5 average of the tunnel. They're not going to -
6 - you know, to any one location.

7 So, if we feel -- if we have a
8 sense that we think we've captured the typical
9 values that were in the tunnels over those
10 years, we will say that and quite frankly, our
11 position will be, if we think that those --
12 the way in which you've come at the problem,
13 let's say this two-pronged approach is able to
14 place a plausible upper bound on what the
15 concentrations might have been or would likely
16 have been over that time period in the
17 tunnels, we will say that.

18 Now, that will then be a -- our
19 findings to the Work Group, and you folks --

20 CHAIR ROESSLER: Then we'll have to
21 --

22 DR. MAURO: You'll have your own

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1 opinion. You may not like -- you may not
2 agree, and then let's say you do, you would
3 bring it to the full Board. I can -- I'm sure
4 that there will be Board members who have lots
5 of questions. There are some Board members
6 that like models, who don't like models, but
7 some Board members who will like the way the
8 measurements are made or might not like the
9 way the measurements are made.

10 We do have members of the Board
11 that have a tremendous amount of expertise in
12 this area.

13 CHAIR ROESSLER: That brings up the
14 question that I have, and Josie has a comment
15 too, but if I could interrupt here.

16 This is something I thought of
17 before, since we're dealing with radon, in
18 this last piece here; is it possible to invite
19 Bill Field's participation in the Work Group
20 at this point? I don't know if we've ever
21 done that.

22 MR. KATZ: You absolutely could

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1 invite Bill --

2 CHAIR ROESSLER: I think that would
3 be --

4 MR. KATZ: The only limitation in
5 the Work Group is, you can't have a quorum.
6 But there is no reason that Bill Field can't
7 attend the Work Group meeting.

8 CHAIR ROESSLER: I would think if
9 we actually go forward with this approach, and
10 that we have -- that we delay, which it looks
11 like we're going to do, a recommendation to
12 the Board at this next meeting, that we allow
13 NIOSH to go ahead with these two approaches
14 and then, we have another Work Group meeting
15 that we should pursue inviting Bill to work
16 with us.

17 MEMBER LOCKEY: I'd like to
18 interject something. I think the four of us
19 have to decide, if we invited Bill Field to
20 this, and you and NIOSH and Bill Field agree
21 that this model does -- it's scientifically
22 sound in relationship to bounding potential

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1 exposures, is that going to make any
2 difference to all members of the Work Group,
3 or is it, it doesn't make any difference at
4 all, then I would say, don't go ahead and
5 spend the money. This is not worth it, not
6 worth the time either.

7 DR. MAURO: I hear your question,
8 but I want to add another thing is, you want
9 to -- this has become a collaborative effort
10 now. In other words, if -- let's say Bill was
11 here, and he provided some feedback, we're
12 losing our independence, aren't we?

13 MR. KATZ: No, this is a Work Group
14 --

15 DR. NETON: We wouldn't be advising
16 you, we'd be advising --

17 MR. KATZ: This is a Work Group --

18 DR. NETON: It's more or less
19 advising NIOSH --

20 DR. MAURO: You see, I want to --

21 CHAIR ROESSLER: Well, I wasn't --

22 DR. MAURO: I'm starting to get a

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1 little nervous, to tell you the truth, because
2 I'm sitting here, giving you my scientific
3 ideas, the strategies for solving a problem; I
4 don't know if I'm supposed to be doing that.

5 CHAIR ROESSLER: Well, I mean, my -
6 - let me make it clear that by suggesting we
7 invite him was for his expertise in radon, not
8 for a vote for the Work Group, because that --
9 you know, I don't think that would be
10 appropriate.

11 DR. MAURO: Right.

12 DR. NETON: Well, I'm going back to
13 the stuff before that. I'm going back to
14 looking at the four of us at this table and
15 saying, we have scientific evidence that from
16 -- it comes from you and from NIOSH, and say
17 that, yes, this is bounding. This is a
18 scientifically sound model.

19 But in the Board as a whole,
20 people do not accept models that are
21 scientifically sound. That doesn't influence
22 their decision-making process.

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1 This is government money we're
2 spending and government time, all right. So,
3 I would be asking all four of us, if it
4 doesn't matter what we do, it's going to make
5 a difference to us, then why should we proceed
6 down this avenue?

7 MR. KATZ: Well, I mean, let me
8 just say, I mean, it -- if it doesn't -- if it
9 didn't matter to any of you, then absolutely,
10 there's no point in proceeding, at least as a
11 Work Group, because it doesn't help you with
12 the Work Group recommendation, if none of you
13 care what the outcome of this work is.

14 I mean, at this point, they're
15 working for the Work Group. They're staffing
16 you as a Work Group, in being able to resolve
17 issues --

18 DR. NETON: So, you do have to
19 resolve that.

20 MR. KATZ: So, if nobody on the
21 Work Group cares about the outcome of this
22 work, then certainly, there's no reason to

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1 continue it at the Work Group level, then send
2 this up to the Board.

3 But if one or more of you at the
4 Work Group level want to see this resolved,
5 that's a different question, or at least if,
6 you know, half of you want to see this
7 resolved, that's a different question, because
8 then --

9 CHAIR ROESSLER: That's good and --

10 MR. KATZ: -- it's valuable work
11 for the Work Group.

12 CHAIR ROESSLER: Let's address that
13 with the Work Groups members in a minute, but
14 I think Josie has been sitting there with her
15 hand up.

16 MEMBER BEACH: Well, the other part
17 of my question was the radon measurement, but
18 also, some smear samples.

19 So, should we get permission to go
20 in and do a radon sample? Could we take some
21 swipes to see what the current level is in the
22 tunnel and is that something that we'd want to

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1 pursue? The last data --

2 CHAIR ROESSLER: You're talking
3 about, like, core samples or something?

4 MEMBER BEACH: No, just smear
5 samples, contamination.

6 DR. NETON: Well, there was a
7 combination of fixed and smeared samples. It
8 was all fixed. Mutty, help me out, was it --
9 were there all fixed contamination
10 measurements?

11 MR. SHARFI: In 2001, the Army Corp
12 did a -- yes, a fixed contamination sample --
13 or they did -- yes, they just did a survey of
14 it --

15 DR. NETON: Right, which is easier.

16 MR. SHARFI: -- of the
17 instruments. Now, in 76 or 78 or whatever it
18 was, when FUSRAP did it, they did smears.

19 DR. NETON: So, the bulk of the --
20 the 2001 measurements were fixed. So, those
21 are actually easier to obtain the smears and -
22 -

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1 MR. SHARFI: Well, they're
2 surveyed, so, they'd be fixed plus removable.

3 DR. NETON: Exactly, so, you know,
4 that's just a survey meter measurement and
5 convert that to a DPM per 100 square
6 centimeters or per square meter, however they
7 presented it. We had that -- that's certainly
8 doable.

9 I'd like to bring an issue to the
10 table that I think Antoinette Bonsignore may
11 have alluded to and I want to make sure people
12 are comfortable with this, and that is these
13 numbers were made in 2001. I don't want to go
14 down this path and then all of a sudden have
15 an issue because these were -- we're
16 predicting backwards to 1954, with 2001
17 measurements, and maybe 1976 measurements, as
18 well, but the long time period.

19 Our position is that those values
20 are reasonable, because of the way the
21 material is laid down within the top. It was
22 migrated groundwater that accumulated in

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1 there, migrated out and that it seems to me
2 that it's -- the removal pathway is
3 essentially not in existence, not like we
4 would normally do a residual contamination
5 clearance, when there's a lot of activity and
6 removing it from the tunnels.

7 But I just want to make sure that
8 people are aware of that issue, I think they
9 probably are, but we need to -- I'd like to
10 hear some opinions from the Working Group on
11 that, and look for a -- before we move
12 forward, because, you know, at the end of the
13 day, if we do these measurements and we say,
14 great, these are -- these values as of 2010,
15 they're probably representative of 2002, but
16 we don't believe that they can accurately
17 predict anything prior to 1980 or 1970 or
18 whatever, then, it's a waste of time.

19 Well, we could do it, but then
20 it's not going to be helpful to the Working
21 Group, put it that way.

22 CHAIR ROESSLER: Then, I think

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1 we're at the point of asking each Working
2 Group member for their thoughts on this and
3 their recommendations as to where we should go
4 with this, keeping in mind what Dr. Lockey
5 said and everybody said.

6 So, are Work Group members ready
7 to make a statement?

8 MEMBER BEACH: Well, one thing I
9 thought of during this discussion is, how much
10 of the tunnels are still left.

11 We heard that some of them were no
12 longer there. That's a question I would have.
13 Would we get a representative sample, based
14 on the tunnels, as they were and as they are
15 now, and I don't have the answer to that, but
16 it is a question.

17 DR. NETON: Well, I think what we
18 could do though is, we have detailed survey
19 measurements for the entire tunnel complex, as
20 far as I know. So, whatever remaining pieces
21 are there, you know, could be used in
22 conjunction with the model.

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1 The model could be used to predict
2 what the concentration was in the remaining
3 pieces. Like, we took the highest
4 contamination and came up with a value, but we
5 could model that piece and use that as an
6 independent verification and if the model
7 value is -- appears reasonable, we could end
8 up using that and essentially, the ledger
9 values would end up being verification that we
10 were -- we were bounded. That's my thinking
11 on that.

12 CHAIR ROESSLER: And I'm thinking
13 we should look at it as Work Group members,
14 not only that this measurement is possible,
15 but we have to look at the other aspect, too.

16 If it's not, then what do you think about
17 pursuing the modeling and diffusion and the
18 rest of it?

19 So, if you could, you know, give
20 us your input at this point, as to -- well, we
21 need to know whether to go forward at this
22 point and say that NIOSH should do this, or

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1 not, I think is what Dr. Lockey suggests.

2 MEMBER BEACH: I personally think
3 it would be interesting to do it, if we had
4 the approval, because we still don't have
5 that.

6 MEMBER LOCKEY: Would it help you
7 to say that you can bound it if SC&A and NIOSH
8 say, it's good data, the model is good, we
9 combined it?

10 MEMBER BEACH: It would help, you
11 know, if we have the ability. The tunnels are
12 still there. We have the ability to sample.
13 I think that's a good idea.

14 MEMBER GIBSON: Well, I think in my
15 opinion, you know, it's probably no surprise
16 to any of you that I'm not real favorable
17 about modeling and you know, all these
18 scientific calculations and stuff.

19 You know, I think the reason for
20 this compensation program was, there is a lack
21 of adequate data and if we don't have proper
22 data, solid data to go back to, without

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1 getting all this modeling and this and that,
2 you know, I won't say that I would not --
3 would never agree to any of this, but
4 obviously, I'm going to be very hesitant to.

5 CHAIR ROESSLER: So, then --

6 MS. BONSIGNORE: Gen, may I ask a
7 question?

8 CHAIR ROESSLER: Let me make sure I
9 understand what Mike is saying first.

10 Are you saying we should go
11 forward with further instructions to NIOSH to
12 try and do two things: do more of the modeling
13 and also try to see if they can get some
14 measurements in current tunnels? What are you
15 recommending?

16 MEMBER GIBSON: Well, I'm leaving
17 it open, but I'm just stating my opinion. I
18 think models could -- the best thing for the
19 claimants would be for us to say that there's
20 not adequate data to review their doses and
21 recommend to the Board that we, you know,
22 recommend this SEC go forward.

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1 I realize, you know, that maybe
2 not the majority of the Board that feels that
3 way, or even this Work Group. So, you know,
4 if the rest of the Work Group wants to go
5 ahead with this modeling, that's fine. I'm
6 not saying no to it, that I would vote no to
7 it, but --

8 CHAIR ROESSLER: You're sort of --

9 MEMBER GIBSON: I'm hesitant.

10 CHAIR ROESSLER: -- abstaining.
11 You're not really recommending one way or
12 another, is that what you're saying? I'm
13 hearing --

14 MEMBER GIBSON: I'm just saying, I
15 think everyone knows that I'm hesitant to rely
16 on modeling and things like that for trying to
17 reconstruct doses or bound doses not just in
18 this instance, but in most instances.

19 MEMBER BEACH: Well, that question
20 isn't too hard, to go in and do the sampling,
21 they're already doing the modeling. So, the
22 sampling was above and beyond, and then

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1 possibly, in conjunction with it, but just to
2 see what's there, I mean --

3 CHAIR ROESSLER: Okay, I think what
4 -- I think again, what Dr. Lockey is asking,
5 and clarify this, is our way of -- a point
6 we're at right now, are we, as a Work Group,
7 saying, yes, we should pursue this further?
8 We are going to actually delay our decision,
9 our recommendation to the Board and we're
10 going to ask NIOSH to go further, whether it
11 be more modeling -- well, two things, really,
12 modeling and look at the measurements.

13 Is that -- that's where I think
14 we're at.

15 MEMBER LOCKEY: You know, I do a
16 lot of modeling in a lot of my human research
17 studies, historical modeling, and we've done
18 it for a long time. So, I'm used to modeling
19 for recreating exposures, and we rely on the
20 modeling.

21 This, however, is more of a
22 compensation program, but the way I'm coming

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1 at this is, really, in relationship to, if the
2 people I rely on, who were scientists and
3 knowledgeable and health physicists in the
4 area, who tell me, you can do this. It's a
5 scientifically sound model. It works. It's
6 worker-friendly. It's petitioner-friendly,
7 especially something like radon, where
8 essentially, the only cancer associated with
9 radon is perhaps in leukemia or myeloma and
10 lung cancer. So, we're not talking about
11 prostate cancer, GI cancer, pancreatic cancer,
12 all right. It's lung cancer, and if you have
13 lung cancer, you're going to get compensated.

14 So, from a medical perspective,
15 that's very scientifically sound.

16 If the scientific evidence that's
17 persuasive from our experts, is not enough to
18 sway other agendas, or other people that may
19 be coming from -- and I'm not saying they're
20 right or wrong, then I'm going to oppose using
21 NIOSH's time and spending taxpayers' money to
22 pursue it, because it presents a real moral

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1 dilemma for me. Don't do it. Why?

2 You know, our government has --
3 can use resources in many other things than to
4 spend time and effort to do things that we're
5 not going to use and it's not going to sway
6 the vote one way or the other, if we're not
7 basing on good science.

8 So, I'm going to be opposed to it,
9 based on what I'm hearing, because I don't
10 think it will be utilized, even if it comes
11 out and that it's scientifically sound, we can
12 do it, I don't want to waste NIOSH's time to
13 do it, and not -- and that's just how I feel.

14 DR. MAURO: That applies both to
15 the model and to the measurements?

16 DR. NETON: If we're not going to -
17 - if we come back and say, we can do it and
18 this is scientifically sound, and I have a lot
19 of respect for you, because you guys have been
20 doing it for so darn long, and it's not going
21 to be used and not going to be accepted, I
22 don't want you to spend NIOSH's -- I don't

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1 want you to spend our budget any more in this,
2 okay, because that's a real moral hazard.

3 CHAIR ROESSLER: I will speak
4 opposite to that, Jim, because I think what
5 you're talking about is a much broader issue
6 and we're focusing just on this petition and I
7 feel bound by the intent of the law to pursue
8 this the way we have always done it in other
9 Work Groups and in other situations that we
10 pursue it and finish it: get the best
11 scientific information. And I understand the
12 delay and I understand the money, but I really
13 think that issue is much bigger than just this
14 Work Group.

15 So, I think we ought to think
16 about Linde and where we go from here and I
17 personally think we ought to allow NIOSH to
18 have a chance to do this further work and that
19 we ought to invite a radon expert to meet with
20 us at our next Work Group meeting and then
21 come up with a decision.

22 MR. KATZ: I'd like to speak to

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1 this too, then, as the Designated Federal
2 Official who has to worry about HHS resources
3 and so on.

4 I think it is incumbent on the
5 Board always to do as good a job as possible.

6 I mean, so, to worry about how a Board vote
7 will go down the road is another issue that --
8 but -- or to try to predict in advance where
9 the Board will fall out, but I think every
10 Work Group ought to be pursuing the science
11 until it is satisfied that it has a well
12 informed position to recommend to the full
13 Board. Every Work Group should be doing that
14 and the Board as a whole should be doing that,
15 should be pursuing questions until they feel
16 like they have resolution, in their -- each
17 member's mind.

18 I'd be concerned about, sort of,
19 tarot-reading or whatever, and the --

20 MEMBER LOCKEY: I mean, I'm just
21 dealing with the Work Group here. I'm just
22 doing this Work Group, okay, just this Work

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1 Group, not with the -- how the Board would
2 vote one way or the other. But I'm just
3 dealing with this Work Group.

4 MR. KATZ: Right.

5 MEMBER LOCKEY: And with this Work
6 Group, we're tasking SC&A to do additional
7 work. We're asking NIOSH to do additional
8 work.

9 But if the end result doesn't mean
10 -- is not going to be acceptable, even though
11 the people we're asking to do it, we're
12 relying on, and if John comes back and says,
13 no, we can't do it, I rely on what John says,
14 we can't do it, and that is very persuasive to
15 me.

16 MR. KATZ: Well, I mean, this goes
17 back to what I said then, a little bit
18 earlier. If you have a majority of this Work
19 Group who feels like this shouldn't go
20 forward, then I wouldn't go forward with it,
21 absolutely, I wouldn't --

22 MEMBER LOCKEY: That's all I'm

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1 saying.

2 MR. KATZ: -- ask DCAS to do more

3 --

4 MEMBER LOCKEY: That's all I'm
5 saying.

6 MR. KATZ: -- or so on,
7 absolutely. But if you have, you know, if two
8 or more of you think that this work would be
9 valuable and informative to the Board's
10 overall proceedings, then I think you should
11 go forward with it.

12 CHAIR ROESSLER: And I think by
13 following what Jim is suggesting is it --
14 maybe it's just focused on this Work Group,
15 but it sets a precedent that I'm not willing
16 as Chair of this Work Group to embark on,
17 because I think it has broader -- I still
18 think it has broader implications and I think
19 what we've come to, following what Ted has
20 said is that the Work Group does feel, not
21 unanimous, that the work should go forward and
22 we have another meeting.

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1 MS. BONSIGNORE: Gen, may I ask a
2 question?

3 CHAIR ROESSLER: Sure.

4 MS. BONSIGNORE: It's -- NIOSH
5 would go forward with additional measurements
6 from the tunnels. Does that mean that SC&A
7 would not evaluate what the radon model that
8 NIOSH is working on right now --?

9 CHAIR ROESSLER: No, it --

10 MS. BONSIGNORE: -- what they have
11 to date?

12 CHAIR ROESSLER: No, Antoinette,
13 what we're saying is that we would instruct
14 NIOSH to go ahead with the two parts of this
15 for the work, that we then come back together,
16 and then SC&A evaluate it and they have agreed
17 that they would do that, and then we come back
18 as a Work Group, and do the -- you know, the
19 same thing we've always done as a Work Group:
20 listen to NIOSH, listen to SC&A's evaluation,
21 discuss it, and then as a Work Group, come up
22 with our recommendation to make to the Board.

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1 MEMBER LOCKEY: Now, I'm sorry,
2 maybe I didn't pose the question correctly.

3 What I'm trying to find out is,
4 right now, DCAS is working on a radon model.
5 They're basing that radon model on the 2001
6 and 1976 data. Will SC&A evaluate that model,
7 or will they only evaluate any measurements
8 that they're planning to do in 2010?

9 DR. OSTROW: Okay, this is Steve.
10 The way I understand it, the intent is that
11 whatever NIOSH produces, the model, for
12 certain, we'll look at and -- their
13 measurements, and I assume that -- I don't
14 want to speak for DCAS, but I assume that
15 they'll wrap it into one report. It's not
16 going to be like two separate pieces.

17 They'll have a report on radon
18 that will have a measurement part, if they're
19 doing measurement, and they'll have a
20 calculation part, and will come out with some
21 reconciliation of measurements in the
22 calculation, and then we'll look at that and

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1 make an assessment and give it to the Board.

2 MS. BONSIGNORE: Okay, so this is -

3 -

4 MR. KATZ: And just to be clear --

5 MS. BONSIGNORE: -- my concern
6 with this discussion, that I feel like I have
7 to state here.

8 DCAS is working on a model right
9 now -- regardless -- you know, let's say, we
10 weren't even talking about doing any
11 additional measurements.

12 DCAS is working on a radon model
13 right now. So, you're proposing to delay even
14 further evaluation of this petition before the
15 Board to obtain additional measurements.

16 The problem I have with that is
17 that now, we are well beyond -- we are so well
18 beyond the 180-day time limit for the -- for
19 the final Evaluation Report for this petition,
20 and I think it is unfair to the workers to
21 continue looking for data and information
22 that, in my mind, is -- you're looking for

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1 information that can be used to recommend the
2 denial of this petition because you're looking
3 for ways to bound the radon model.

4 So, I think it's only fair that
5 the workers know what SC&A's opinion is of the
6 model that DCAS is working on right now
7 because DCAS and SC&A have known about workers
8 being in tunnels since 2006. This is not a
9 new issue.

10 The fact that no one ever -- no
11 one at DCAS or SC&A ever really investigated
12 worker exposure in the tunnels until I raised
13 the issue in December 2009 isn't really the
14 fault of the workers.

15 MR. KATZ: Nothing is the fault of
16 the workers, Antoinette. That's to be
17 certain.

18 This is Ted. DCAS has not
19 produced the model yet. So SC&A can't review
20 it until it comes out the pipe and they will
21 do that when it comes out the pipe.

22 The measurements, whether they

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1 occur or not, is still uncertain because there
2 are only a number of ways, including getting
3 permission in which we can get those
4 measurements. So that's not a certainty,
5 that's to be sure, and just --

6 MS. BONSIGNORE: I understand that,
7 Ted, but I --

8 MR. KATZ: And then to address the
9 180-day --

10 MS. BONSIGNORE: I'm not, in
11 theory, opposed to doing additional
12 measurements, but what I would expect is that
13 what you have now should be evaluated and that
14 radon model should be evaluated by SC&A.

15 MR. KATZ: I will try to answer you
16 and I'm -- and Steve answered you, too. It
17 will be evaluated. It cannot be evaluated
18 until DCAS produces it.

19 MS. BONSIGNORE: Okay.

20 MR. KATZ: Yes, but we've said
21 that, I think. It's absolutely going to be
22 evaluated.

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1 MS. BONSIGNORE: Okay, I was
2 confused by what Steve said, for -- it didn't
3 seem as though -- it seemed as though you were
4 going to wait until --

5 MR. KATZ: No, there's 100 percent
6 certainty if a model is produced by DCAS, SC&A
7 will review that model, I promise you that
8 will occur.

9 If there is -- are also new radon
10 measurements that are produced in the time
11 being, then SC&A will also evaluate those. If
12 they're all wrapped up in one report, they'll
13 evaluate it, in evaluating the whole report.
14 If these come out as separate widgets out of
15 the pipe, then they'll evaluate them
16 separately.

17 But certainly -- and they'll have
18 to take -- consider them together, because
19 they relate to each other, but they will all -
20 - this will -- all of this information, new
21 information to come will be evaluated by SC&A
22 and the Work Group, you know, will meet after

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1 SC&A has had sufficient time to evaluate it
2 and inform the Work Group about its views.

3 MS. BONSIGNORE: Okay --

4 MR. KATZ: Is that good?

5 MS. BONSIGNORE: As long as their
6 will be -- whatever final report that there
7 is, that there will be separate analysis of
8 both what you have right now and, if these
9 measurements are conducted -- the additional
10 measurements are conducted, then you'll
11 evaluate that separately from what you have
12 right now.

13 CHAIR ROESSLER: We will follow our
14 usual procedures that we've done in all Work
15 Groups and when we get the information from
16 NIOSH, SC&A will have a chance to evaluate it,
17 produce a report. Then it will come to the
18 Work Group.

19 But, Antoinette, you brought up
20 something else that I think Ted needs to
21 answer. She mentioned 180 days.

22 MR. KATZ: If you want me to speak

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1 to 180 days, I can address that too, again.

2 MS. BONSIGNORE: Well, you know,
3 I've been told repeatedly that the 180 days is
4 not binding. I don't understand why that is,
5 but --

6 MR. KATZ: The 180 days is for DCAS
7 to produce an Evaluation Report for the Board
8 to consider.

9 But once the Board enters into
10 deliberations on a petition, the Board can
11 raise as many questions as it might have and
12 ask both DCAS and its own contractor to
13 investigate those questions and so, that
14 process, post-DCAS reporting out a petition to
15 the Board, does not fall under the 180-day
16 time limit.

17 MS. BONSIGNORE: Okay. So, are you
18 saying that the Evaluation Report that was
19 produced in November 2008 is the report that's
20 going to be evaluated by the full Board?

21 MR. KATZ: No, I am saying that
22 that's one piece of information that will be

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1 evaluated by the Board, but the Board relies
2 heavily, in almost every petition I can think
3 of -- particularly petitions where there is
4 the potential to deny part of the Class -- on
5 its own investigation subsequent to an
6 Evaluation Report.

7 So, there is lots of
8 investigations, as you know, that go on after
9 the Evaluation Report has been delivered.
10 Some of those investigations are conducted by
11 DCAS at the Board's behest. Some of those are
12 conducted by SC&A. All of that information is
13 heavily relied upon by the Board.

14 MS. BONSIGNORE: Okay, but you do
15 understand what my question is here, Ted. I
16 mean -- there was a report that was produced
17 in November 2008, within the 180-day time
18 limit.

19 MR. KATZ: Yes.

20 MS. BONSIGNORE: You know, at some
21 -- I just -- my concern is, is that what goes
22 on afterwards is going to be considered

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1 equally with what was available to DCAS at
2 that 180-day time limit.

3 MR. KATZ: Right, and I would say
4 that the Board relies on all this information.

5 As for what information sort of holds the
6 most weight with the Board in making a
7 decision related to a petition that -- there's
8 no -- there's no one answer I can give you.
9 It's whatever is most compelling to the Board,
10 is how the Board will make its recommendation,
11 and maybe it's going to be an amalgamation of
12 all sorts of information, no doubt, in a
13 complicated case.

14 MS. BONSIGNORE: Okay, I'm just
15 trying to raise an issue that a lot of
16 petitioners have with this process, is that
17 you're essentially, you know, continuing to
18 work beyond the 180 days, and that --

19 CHAIR ROESSLER: But Antoinette --

20 MS. BONSIGNORE: -- and that
21 material is often used to further justify the
22 denial or recommendation of a denial of an SEC

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1 petition.

2 MR. KATZ: Well, I mean, an awful
3 lot of SEC petitions, where there's a lot of
4 work done post the initial Evaluation Report,
5 my guess is, the vast majority of those are
6 actually for addition of classes, not for
7 denial.

8 But however that falls out, it is
9 the design of the system, is the design of the
10 rule as it's specified for the Board to do
11 these investigations as deeply as it wishes to
12 - to satisfy its need to understand, with
13 respect to the criteria it has to apply to a
14 petition, and that it can make use of the
15 resources, or at least, it solicits the
16 resources of NIOSH/DCAS, to do some of these
17 investigations, as well as its own contractor.

18 But again, to get -- at the end of
19 the day, the Board wants to get to what it
20 feels is the truth for a given petition and
21 however deep it needs to dig to get to that
22 truth, that's what it's been doing all these

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1 years, these 10 years almost.

2 CHAIR ROESSLER: And I suggest that
3 we move along on this same path that we've
4 established and I think I have a sense for
5 what the Work Group wants us to do on this,
6 but I think we should perhaps take a formal
7 vote, and I'll start it out by saying that as
8 Chair, I recommend that we instruct NIOSH to
9 follow through on these remaining items, that
10 we then have another Work Group meeting to
11 evaluate them, after, of course, we get our
12 report from SC&A.

13 Anybody else want to weigh in on
14 this? We can get a feeling for the Work
15 Group.

16 MEMBER GIBSON: I agree with that.

17 CHAIR ROESSLER: Okay, Mike agrees
18 that we --

19 MEMBER BEACH: I also agree with
20 that.

21 CHAIR ROESSLER: You know, I don't
22 think you have to vote. I think this will be

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1 a majority, if you prefer not.

2 MEMBER LOCKEY: You know, my
3 opinion is that, being a scientist, I rely on
4 -- I do rely on scientific data. So, I'd like
5 to see what the science says.

6 So, based on that, I do rely on
7 that. So, I would say we should go ahead, but
8 I do have reservations as to my thoughts that
9 I said previously.

10 CHAIR ROESSLER: Okay, then I think
11 we're clear on that and I think we can move to
12 the next item, unless somebody -- I think we
13 can finish here, in a short while, unless you
14 want to break and come back, or should we move
15 along?

16 DR. MAURO: I just have a question.
17 With regard to this measurement issue, I
18 mean, I understand that you decided yes, that
19 -- the modeling will go forward.

20 CHAIR ROESSLER: Okay, measurement,
21 if possible.

22 DR. MAURO: And now measurement, is

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1 that a separate decision you folks would make,
2 to recognize --

3 CHAIR ROESSLER: No, that's --
4 because we're going to move -- I think the
5 idea was, should we instruct NIOSH to move on,
6 and certainly, they should on the modeling.

7 DR. MAURO: And modeling, and --

8 CHAIR ROESSLER: And try to get --

9 DR. MAURO: -- and measurements
10 also, and look into measurements.

11 CHAIR ROESSLER: If that's
12 possible.

13 DR. MAURO: Okay.

14 CHAIR ROESSLER: If that's
15 possible.

16 DR. MAURO: Okay, I just wanted to
17 understand that.

18 CHAIR ROESSLER: Yes, and then with
19 producing a paper on what they conclude, and
20 then providing it for SC&A, and I suppose at
21 this point, we should ask something about the
22 time frame.

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1 MR. KATZ: I think that's good.

2 CHAIR ROESSLER: Yes.

3 DR. NETON: That's a good question.

4 CHAIR ROESSLER: Thank you.

5 DR. NETON: As far as the modeling
6 goes, I would say we'd probably have that
7 within a month or so, it seems reasonable to
8 me. Measurements are another story. I mean,
9 we need to figure out if we can get permission
10 and what time frame -- if we do, we get
11 permission, we work out all the logistics of
12 that, including any legal issues that may be
13 involved. I can't predict that.

14 MR. KATZ: Yes, it's hard to -- I
15 think that's hard to speak to at this point,
16 given that we haven't spoken to the owners of
17 the property, even.

18 CHAIR ROESSLER: But it seems
19 feasible to me that we can achieve a goal of
20 having another -- getting this put together,
21 having another Work Group meeting and then
22 reporting at the next --

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1 DR. NETON: Yes, I think that's a
2 reasonable goal.

3 MR. KATZ: Yes.

4 CHAIR ROESSLER: -- Board meeting.

5 MR. KATZ: The next full face-to-
6 face Board meeting?

7 CHAIR ROESSLER: Oh, face-to-face?

8 MR. KATZ: Yes, because you're
9 talking about 30 days of --

10 DR. NETON: Measurements.

11 MR. KATZ: -- measurements, if you
12 get permission and then, there's some analysis
13 and no doubt --

14 DR. NETON: Analysis is quick.

15 MR. KATZ: Quick, okay, so, that --
16 yes, that seems like a reasonable time frame.

17 CHAIR ROESSLER: And then seeing
18 that SC&A knows fully what we're looking at
19 here, and we've fully discussed it, it
20 wouldn't take you a long time to evaluate
21 their conclusions.

22 MEMBER LOCKEY: I would say that

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1 getting into the facility to do the sampling
2 is -- that's not a short-term process. That's
3 going to be a relatively long-term process
4 because the owners of the facility are going
5 to be concerned about what they're going to do
6 with the results.

7 MR. KATZ: Yes.

8 MEMBER LOCKEY: And so, I suspect
9 that --

10 MR. KATZ: It's a big question
11 mark. I would really -- I don't think --

12 MEMBER LOCKEY: As far as I know,
13 we have no legal authority to --

14 MR. KATZ: No, we can't kick down
15 the door.

16 MEMBER LOCKEY: Oh, no, but I'm
17 saying, as far as the time frame is concerned,
18 that is not going to be a 60-day process.
19 That's going to be a six-month to a year
20 process, I suspect.

21 MR. KATZ: Well, that --

22 CHAIR ROESSLER: But at least we

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1 can go for the modeling.

2 DR. NETON: Yes, I would suggest
3 that if it looks like the measurements are not
4 going to be forthcoming in the near term, then
5 we could finish -- complete the model and we
6 put that on the table and --

7 MR. KATZ: Right.

8 DR. NETON: -- and move forward,
9 you know. I mean, it's not going to take a
10 year or it doesn't seem like there's any
11 predicted end date. We'll just move forward
12 with the model and produce it in a time frame,
13 because it needs to be considered before the
14 next Board meeting and I'm thinking a month or
15 so time frame sounds reasonable to me.

16 CHAIR ROESSLER: Okay, so, are
17 there any further questions on this item? I
18 think we've moved along here.

19 On my agenda then, the next thing
20 I had and had asked NIOSH to present their
21 NARA, and I'm not sure what that stands for --
22 College Park Linde records review? I don't

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1 know if that's pertinent to this meeting, but
2 I put it here because I saw notes about it.

3 DR. NETON: Well, I think it is, to
4 some degree, and it's probably -- fits nicely
5 in with the fact that we are delaying any
6 final decision at this point.

7 But we'll -- fairly recently,
8 additional records for Linde Ceramics were
9 identified at the NARA College Park, Maryland
10 facility.

11 I think -- I forget exactly, but I
12 think a box or two of records were tagged as
13 having information relevant to Chapman -- I
14 mean, Linde Ceramics. They are in DOE for
15 review. We've copied them and provided them
16 to DOE for a review for sensitive information
17 and we would like to be able to look at those, as
18 well, before we complete our analysis.

19 I think, given the time frame
20 we've just outlined here, that's certainly
21 doable now. If at some point -- if you're
22 going to move forward, we could make a

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1 decision, I thought it would be useful to at
2 least consider that new information.

3 It may be more relevant for the
4 Petition SEC 154, but you know, we'll take a
5 look at that new information and there's -- my
6 understanding is, there's a series of health
7 physics reports that were contained in those
8 boxes.

9 MEMBER LOCKEY: How much material
10 is there, do you know?

11 DR. NETON: I think a box or two,
12 is my recollection, not volumes. So, they're
13 all small enough that the two person capture
14 team xeroxed it themselves and provided it to
15 department managers.

16 CHAIR ROESSLER: So, that again,
17 would be a part of your report that SC&A would
18 have a chance to look at, and --

19 DR. NETON: Yes, and it may be
20 short. It may -- you reviewed this
21 information and there's nothing of relevance
22 to this issue.

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1 But I wanted to make sure that
2 people were aware that this information was
3 discovered and that it may or may not have any
4 bearing on what we're talking about.

5 CHAIR ROESSLER: So, while we're
6 going down that list, are there any other
7 items that NIOSH wants to bring up to us, that
8 they would include, that would be on the
9 table, that would need to be looked at?

10 DR. NETON: Related to record-
11 capturing or --

12 CHAIR ROESSLER: I mean, anything
13 new, anything that we haven't heard about.

14 DR. NETON: Oh, well, I think
15 there's a -- there was a -- is there a -- my
16 mind is fried today, an agenda item on
17 residual period covered dates at all? Is that
18 not on the agenda?

19 CHAIR ROESSLER: I don't --

20 DR. NETON: Okay, I recently was
21 looking through, getting ready for the
22 meeting, and it dawned on me that the residual

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1 period at Linde Ceramics has gaps in it.
2 There are dates which are not covered and my
3 mind questions why those dates are not covered
4 because it's clear to me that, at least as far
5 as the tunnels were concerned, workers had
6 continuous access to those tunnels throughout
7 the residual contamination period.

8 So, I think that an action item
9 for NIOSH is to inquire with the Department of
10 Energy as to the rationale behind the dates
11 that are listed on the website for the
12 residual period.

13 I just find it odd. I think I
14 understand why. Usually, when the Department
15 of Energy goes in to do a clean-up, there's a
16 remedial action at the site, and the
17 Department of Energy takes control to do the
18 clean-up, it's traditional that the Department
19 of Labor would call that a DOE site for that
20 period, and therefore no residual period is
21 allowed.

22 But in this particular case, I

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1 think this is a different situation. So, I
2 think at least, it's incumbent upon us to
3 inquire to why there are gaps in the covered
4 residual period for Linde workers. It's not
5 obvious to me.

6 MR. KATZ: If that's the case, Jim,
7 shouldn't it show up on the DOE site, then?

8 DR. NETON: I'm getting it off the
9 DOE site.

10 MR. KATZ: But as indicated as a
11 DOE site? I'm saying, during those gaps, is
12 it then indicated that DOE --

13 DR. NETON: It is, it's a DOE site
14 from 1988 to 1992, which is where the covered
15 gap --

16 MR. KATZ: Okay.

17 DR. NETON: -- is that's correct.

18 MR. KATZ: Okay.

19 MS. BONSIGNORE: And I think for
20 1996, too, Jim.

21 DR. NETON: Yes, in 1996, as well,
22 and to me, it's not obvious why the AWE

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1 workers at Linde would not be covered in that
2 residual period. I just -- I think we need to
3 at least ask the question. There may be a
4 very good legal reason or practical reason,
5 but it just seems odd to me that if one's
6 going to cover a residual period, then it
7 should be continuous.

8 MEMBER LOCKEY: Are you talking
9 about 1988 to 1996?

10 DR. NETON: Yes.

11 MR. KATZ: And 1996.

12 DR. NETON: And 1996, right.

13 MEMBER BEACH: So, 1988 to 1992,
14 and then 1996?

15 DR. NETON: Right, and again, I'm
16 not saying we're going to change that. I'm
17 just suggesting that NIOSH take it as an
18 action item, to inquire with the Department of
19 Labor why those are listed as DOE -- why the
20 Linde workers aren't covered?

21 MEMBER LOCKEY: Is it just 1996 or
22 up to 1996?

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1 DR. NETON: Ninety-six only and
2 then it goes -- it becomes a residual -- the
3 residual period picks up again at 1997 and
4 goes to 2009, which effectively is present,
5 because I think October 2009 was a date that
6 the last residual contamination report was
7 listed.

8 So, these tunnels have never been
9 cleaned up, to my knowledge.

10 MR. KATZ: And there's no --

11 DR. NETON: So, to this day, the
12 residual period is in effect, as far as I
13 know.

14 MR. KATZ: For the tunnels?

15 DR. NETON: For the tunnels.

16 MR. CRAWFORD: Remediation was
17 recommended for the tunnels, but it appears --
18 I haven't a statement about this, but it
19 appears that they decided to rip them out,
20 rather than simply try to remediate them and
21 keep them in use and some of them are gone, of
22 course.

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1 DR. NETON: Right, okay. I don't
2 know. I just thought that, you know, if we're
3 going to be dealing with this residual period,
4 I'd like to know at least for my opinion,
5 what's the -- what are the issues here, and
6 there may be nothing that can be done about
7 it, but we'll take that as an action item.

8 CHAIR ROESSLER: Okay, I have that
9 listed as an action item, and I think the
10 other item that we have left on the agenda is
11 under the response by SC&A, and that's the
12 report that came out July 2010.

13 I have it written down as a report
14 on worker interviews, but it's broader than
15 that, and that's your draft White Paper,
16 Steve.

17 DR. OSTROW: Yes.

18 CHAIR ROESSLER: Did you want to --
19 I think we have time to --

20 DR. OSTROW: Yes, I'll just mention
21 briefly. SC&A did interviews of a few former
22 Linde workers during the Niagara Falls Board

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1 meeting, and we did the interviews on May 19th
2 and May 20th.

3 We interviewed four former workers
4 and their representative, Antoinette
5 Bonsignore, who is on the phone right now.

6 And during the interview session,
7 we received a few documents and subsequent to
8 the interviews, Antoinette sent us by email,
9 three different emails, a whole bunch of
10 documents for us to review.

11 So, we actually have two parallel
12 reports. We have one report -- while we were
13 doing the interviews, we produced a paraphrase
14 report of what the workers told us. That
15 paraphrase report -- we did this as a White
16 Paper, a little bit different than usual. We
17 produced it, sent it to DOE. DOE cleared it.

18 We got it back. Sent it to the workers and
19 Antoinette, to take a look at.

20 We received back the comments from
21 the workers and Antoinette and they corrected
22 a few things and filled in a few things that

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1 we might have gotten wrong during the
2 interview process, and we have that right now,
3 and it should be -- we're -- we have the
4 report ready, our -- internally, I think just
5 before -- as of, I think, yesterday or the day
6 before, our production person who takes care
7 of these reports was deciding whether -- well,
8 I think she was going to send it back to DOE,
9 to take one more look at it.

10 She highlighted the things that we
11 changed after we -- after the workers took a
12 look at the report again, and trying to get
13 DOE to provide a few things. Try to get DOE
14 to clear it quickly, so, then we could
15 distribute it to the Work Group.

16 It won't be cleared for Privacy
17 Act, because it names names all over the place
18 right now, this version of it. So, that may
19 be out today, tomorrow, next week, but soon,
20 it depends how fast DOE gets around to this.

21 So, that's one report. In
22 parallel, we did -- we also did another White

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1 Paper, which is dated July 16th, and this is
2 basically reviewing all the documents that we
3 got at the interviews in Niagara Falls, and
4 the ones that were provided to us
5 subsequently.

6 Our reviewing means, we read them
7 all, and this report, did a brief summary of
8 the documents and then gave our comments,
9 whether we thought there was any material
10 issues. Material, as I explained, what it
11 means in the report, to us, means two things.

12 One, that it's -- well, actually,
13 three things. One, that it's a significant
14 issue. Two, that it's new information. And
15 three, that it's actually pertinent to the
16 SEC, because we're focusing on the SEC and
17 we're focusing on the tunnels.

18 And the Work Group should have the
19 report. We basically -- the -- I think
20 basically, we concluded in the report, that we
21 did not -- although it provides a lot of
22 interesting background information, that we

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1 didn't find anything new and startling in it
2 that changes the picture in any way.

3 As I mentioned before in the
4 meeting today, we had some anecdotal reports
5 by the workers that they work -- their tunnel
6 occupancy maybe more than two months a year, a
7 couple of instances like that.

8 This information -- a lot of the
9 information was taken from other reports that
10 are already out there, the FUSRAP reports, the
11 big New York State Assembly report and a few
12 of the other reports, which were made
13 available to everybody, about the injection
14 wells and how many millions of gallons of
15 contaminated waste went into it and so forth.

16 But we didn't find anything new
17 and startling in the material, really. I
18 don't think that's -- so, that was our
19 conclusion.

20 CHAIR ROESSLER: So, there's
21 nothing now, that, from your review of this,
22 that we should assign to NIOSH to pursue any

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1 further?

2 DR. OSTROW: No, the only thing
3 that's -- this is a question that I said NIOSH
4 has looked at, but maybe we can just discuss
5 it right now.

6 This may not even be pertinent.
7 One of the statements claimed that there was,
8 beginning in 1957, which is during the
9 residual period, there was the existence of a
10 cobalt-60 source at the facility that was
11 doing material testing 4,000 curie cobalt-60
12 source, and the workers were unmonitored and
13 there might have been some incident that might
14 have spread radioactivity. The incident is
15 not specified or anything like that.

16 So, the question is, if this
17 cobalt-60 source was placed there during the
18 residual period, and it's not connected with
19 the production period, is it even an issue
20 under our program?

21 CHAIR ROESSLER: And I think Jim
22 should address that.

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1 DR. NETON: Yes, I think our
2 position would be that that's not a covered
3 exposure because it's a source that was
4 present during the -- not present during the
5 contract period.

6 DR. OSTROW: Okay.

7 CHAIR ROESSLER: So, are there any
8 questions on that?

9 MEMBER BEACH: Well, Gen,
10 Antoinette had a question on thorium, I
11 believe.

12 CHAIR ROESSLER: Yes.

13 MEMBER BEACH: But I don't know --

14 CHAIR ROESSLER: Let's make sure
15 we've got this.

16 MEMBER BEACH: Okay.

17 CHAIR ROESSLER: So, anything else
18 then, Steve, on your report? My understanding
19 is that your conclusion is, there's nothing
20 new. You addressed the one question about the
21 cobalt-60 source.

22 DR. OSTROW: I mean, there is -- if

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1 you read the worker statements and so forth,
2 and they're sort of interesting background
3 information, but there's nothing really new
4 that would affect the calculations.

5 CHAIR ROESSLER: Okay, thank you.
6 That's what I wanted to make sure we had.

7 So, I think -- and let me ask Work
8 Group members if they have any further
9 questions and then we'll go to Antoinette's
10 last question, which I think is about thorium.

11 Any other questions within the Work Group?

12 (No response.)

13 Okay, Antoinette, are you still
14 there?

15 MS. BONSIGNORE: Yes, I am.
16 Actually, I had a question for Steve about the
17 documents that we provided.

18 From that New York State hearing
19 from 1981, there were some footnotes that I
20 had pointed out to you that had discussions
21 about material leaking into the tunnels.

22 DR. OSTROW: Yes, but our

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1 conclusion of that is, that even -- okay, that
2 there may have been -- there were leaks into
3 the tunnels, and some contamination that got
4 into the tunnels, but that at least, I think,
5 would be captured in the measurements that
6 were taken later.

7 Whatever got into the lower
8 tunnels got into the other tunnels and it was
9 measured in 2001.

10 MS. BONSIGNORE: Okay, I was just
11 curious if you were able to find those
12 documents?

13 DR. OSTROW: Yes, yes, I did.

14 MS. BONSIGNORE: Okay, okay, just
15 because I wasn't -- I wasn't able to find
16 them, so, I'm somewhat --

17 DR. OSTROW: Well, excuse me, which
18 documents are you talking about? I looked at
19 the full report, the New York State report.
20 Which documents exactly do you mean?

21 MS. BONSIGNORE: The footnotes
22 within that document.

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1 DR. OSTROW: Oh, the footnotes, the
2 reports I mentioned in the footnotes?

3 MS. BONSIGNORE: Right.

4 DR. OSTROW: I didn't look at them,
5 because I didn't think that it was really
6 necessary to do so, because whatever
7 contamination got on the wall of the tunnels
8 was measured later.

9 MS. BONSIGNORE: Okay, so you
10 didn't look into that issue in the report
11 about what the report was saying?

12 DR. OSTROW: I didn't go further
13 than the New York State report. I didn't look
14 at the references that the New York State
15 report produced.

16 MS. BONSIGNORE: Okay, all right,
17 and --

18 CHAIR ROESSLER: Thorium.

19 MS. BONSIGNORE: Yes, thorium,
20 thank you. Do any of the extended models that
21 have been examined so far deal with the amount
22 of thorium that was in the tunnel?

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1 DR. NETON: I believe so. I
2 haven't -- let me just look here very quickly.

3 DR. OSTROW: This is Steve again.
4 I'm looking at their report right now, and
5 they have thorium-230 as one of the isotopes
6 that was --

7 DR. NETON: Right, thorium-230
8 contamination was measured in the tunnel, and
9 --

10 DR. OSTROW: That's part of their
11 model --

12 DR. NETON: That's part of the
13 model, right.

14 MS. BONSIGNORE: Okay, and I was
15 wondering; is LaVon here?

16 MR. KATZ: He is not.

17 DR. NETON: He may be on the phone.
18 LaVon, are you on the telephone?

19 MR. HINNEFELD: This is Stu. LaVon
20 is off of that. I believe he had a medical
21 issue.

22 DR. NETON: Okay.

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1 MS. BONSIGNORE: Okay, because I
2 had asked him to put together a list of
3 documents from the data-capture efforts so
4 far, everything that's been uploaded to the O:
5 drive, with respect to Linde, and I don't know
6 where he was on providing that.

7 MR. HINNEFELD: Okay, I'm not 100
8 percent up to date but I'll get somebody
9 checking on it and we'll get it to you before
10 long, I guess. I'm sure we would have to get
11 it from the contractor. So we ask them for
12 things all the time. So I'll see where it is.

13 MS. BONSIGNORE: Okay, because I
14 had come across some information about a New
15 York State license that had been issued in
16 1977, that dealt with the remediation of the
17 buildings, and I came across this document
18 from Oak Ridge, from 1977, that I'm not sure
19 that DCAS has seen.

20 MR. HINNEFELD: Okay, we will put
21 together the list and we will also search for
22 something like that.

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1 MS. BONSIGNORE: Okay, well, I can
2 forward the document to you.

3 MR. HINNEFELD: That would be
4 great.

5 MS. BONSIGNORE: Okay.

6 CHAIR ROESSLER: Do that as soon as
7 possible --

8 MS. BONSIGNORE: Okay, that's it.

9 CHAIR ROESSLER: Antoinette, do
10 that as soon as possible then, so NIOSH can
11 include that in their assignment.

12 MS. BONSIGNORE: Okay.

13 CHAIR ROESSLER: Okay, thank you,
14 Antoinette.

15 MS. BONSIGNORE: Thank you.

16 CHAIR ROESSLER: So, I think we're
17 finished. Does anybody have anything else on
18 the agenda?

19 MR. KATZ: No. Do you want to
20 report out in any fashion other than the
21 regular Work Group reports during the Board
22 meeting?

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1 CHAIR ROESSLER: I think just a
2 regular Work Group --

3 MR. KATZ: Regular Work Group
4 report, okay. So, then this -- Antoinette,
5 this as a separate agenda item on the Board
6 will come off.

7 MS. BONSIGNORE: Right, okay. So I
8 can tell the workers that the Petition will
9 not be presented to the Board at the August
10 meeting?

11 MR. KATZ: Absolutely, and Gen will
12 report out during the regular -- during a
13 Board working session, on the Work Group, you
14 know, progress. That will be it.

15 MS. BONSIGNORE: Okay, thank you.

16 MR. KATZ: Thank you.

17 CHAIR ROESSLER: Okay, thank you,
18 everyone.

19 MR. KATZ: Thanks, everyone, for
20 attending.

21 CHAIR ROESSLER: We're adjourned.

22 MR. KATZ: And thanks for all the

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1 hard work today.

2 (Whereupon, the above-entitled
3 matter went off the record at 2:40 p.m.)

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