

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
CENTERS FOR DISEASE CONTROL
NATIONAL INSTITUTE FOR OCCUPATIONAL
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ADVISORY BOARD ON RADIATION AND
WORKER HEALTH

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CARBORUNDUM WORK GROUP

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THURSDAY
AUGUST 18, 2016

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The Work Group convened by telephone at
9:00 a.m., Genevieve Roessler, Chair, presiding.

PRESENT:

GENEVIEVE S. ROESSLER, Chair
BRADLEY P. CLAWSON, Member
R. WILLIAM FIELD, Member

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ALSO PRESENT:

TED KATZ, Designated Federal Official

NANCY ADAMS, NIOSH Contractor

BOB ANIGSTEIN, SC&A

KARIN JESSEN, ORAU Team

JENNY LIN, HHS

JOHN MAURO, SC&A

JIM NETON, DCAS

MUTTY SHARFI, ORAU Team

TOM TOMES, DCAS

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Contents

Welcome and Roll Call 5
Brief Summary of DCAS Evaluation Report 7
Review of ER and Findings by SC&A, NIOSH's Response to
SC&A Findings; and Work Group Discussion 22
Adjourn 88

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P R O C E E D I N G S

(10:02 a.m.)

Welcome and Roll Call

MR. KATZ: Welcome, everyone, to the Advisory Board on Radiation and Worker Health Carborundum Work Group. And this is the first meeting of the Work Group.

For folks who, other than Agency folks, might want to access the materials, the agenda for today's meeting and all of the materials that are being discussed, all the papers that have been traded back and forth on various issues, are all posted on the NIOSH website under the Advisory Board section, schedule of meetings, today's date.

So, if you go there, today's date, you can -- all the documents are attached there. You can open them up and follow along with any document that's being discussed. And open up the agenda, by all means, and see what the order of business is.

1 There will be an opportunity for
2 petitioners to comment after the Agency has gone
3 back and forth, and we welcome that. So, roll
4 call.

5 (Roll call.)

6 MR. KATZ: I'd just remind everyone to
7 mute your phones, except when you are speaking.
8 Press *6 to mute your phone, *6 to come off of mute.

9 And, Gen, it's your meeting.

10 CHAIR ROESSLER: Thank you, Ted. I
11 want to comment: I'm handicapped hearing-wise
12 sometimes but I can hear everybody really well
13 today. I'm actually real plussed.

14 So, everyone has the agenda. We will
15 be starting with Tom Tomes presenting a brief
16 summary of the DCAS Evaluation Report. Tom
17 presented this to the Board in July 2015, a very
18 detailed report, but I thought it would be good if
19 you could do a short summary today. So we'll start
20 with that.

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1 And after he finishes, then we'll do
2 SC&A's review of the findings and NIOSH's response
3 to their review. And I think we will do it like
4 we usually do, one finding at a time.

5 So, Tom's slides are on Live Meeting,
6 in case anyone wants to look at them. We also got
7 them in the attachment to Ted's email that he sent,
8 I think, on the 16th, maybe.

9 Okay, Tom, if you are ready, let's go.

10 **Brief Summary of DCAS Evaluation Report**

11 MR. TOMES: Thank you, Dr. Roessler.
12 I'll start out here with the Carborundum facility
13 description from the DOE website. Right off, I
14 should point out that, during the presentation in
15 July 2015, we discussed the fact that the
16 Department of Labor was in the process of
17 redefining the first AWE period, and that's
18 reflected here on this slide but I'll flag what it
19 was changed to. And the ER that we prepared was
20 prepared and assessed based on the period listed

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1 here on the slide.

2 Carborundum is an AWE from June to
3 September 1943 and then again from '59 to '67. And
4 there's a residual period in between those two
5 periods, as well as after.

6 The Carborundum facility, in June 1943,
7 did centerless grinding for the Manhattan Engineer
8 District. And from 1959 through 1967, they
9 manufactured plutonium carbide pellets for AEC
10 research programs.

11 The June 1943 work consisted of
12 experimental centerless grinding. At that time,
13 the AEC was interested in finding a way to do the
14 finish grinding on slugs and they sent 10 slugs to
15 Carborundum to test different abrasives that might
16 work.

17 And the 1959 through 1967 work
18 consisted of methods to fabricate pellets.

19 NIOSH received the petition in November
20 2014. The requested Class was for any workers from

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1 the Buffalo Avenue facility in Niagara Falls from
2 1943 through 1976. And I should point out that
3 Carborundum had another location in Niagara Falls
4 which is not part of this particular petition.

5 For the 1943 work, we have no records
6 to indicate what particular building or area of
7 Carborundum that work took place. We don't know
8 if it was Buffalo Avenue or the Hyde Park facility.
9 So we did an evaluation of the particular work that
10 was going on and then the location.

11 The work was limited to the
12 experimental grinding that I mentioned earlier.
13 We have records that Carborundum, and I think it
14 was June 1st of 1943, received 30 pounds of slugs.
15 They reported the results back to the Manhattan
16 Engineer District approximately a month later,
17 shortly over a month later, which basically
18 detailed the different abrasives they tried, ones
19 that worked, ones that didn't. And their
20 experimentation with different settings for

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1 grinding. The slugs were shipped back to the
2 Manhattan Engineer District in the end of
3 September.

4 For evaluating doses, DCAS is using
5 TBD-6000 for exposure to metal and centerless
6 grinding for internal exposures.

7 For the residual period immediately
8 after that, we are using the residual radioactive
9 period OTIB for methods to assess resuspension of
10 contamination. That's based on a method that we
11 used in many different sites and using the airborne
12 estimates from that TBD-6000.

13 The external dose during the residual
14 period is based on contamination levels and dose
15 coefficients in Federal Guidance Report No. 12.

16 In 1959, Carborundum was a contractor
17 and a subcontractor both through the AEC and to the
18 United Nuclear Corporation in the Reactor Fuel
19 Development Program. They did work initially with
20 uranium and then shortly thereafter they started

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1 the uranium/plutonium research, which was done in
2 a facility designed for plutonium. This work was
3 done in Building 53, which was -- excuse me. The
4 building they did it in was opened in 1953, so it
5 was a modern facility at that time.

6 The work consisted of developing
7 methods to synthesize the fuels, and also they
8 experimented with different techniques and they
9 did testing of the pellets for the physical
10 properties.

11 The plutonium laboratory, the contract
12 for the plutonium work was signed in 1959. They
13 received their first shipments of plutonium in 1960
14 and plutonium was introduced into the laboratory
15 in early 1961.

16 The laboratory was a fairly small area.
17 There's a lot of details on the construction of it
18 and how it was designed, with the work area was
19 approximately a 555 square foot area. It had six
20 glove boxes and other equipment for processing the

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1 materials.

2 The uranium laboratory, that uranium
3 work that was done initially, was done in the same
4 area of the same building. However, it was not in
5 the plutonium facility. The first floor of this
6 particular building had a uranium laboratory and
7 then they had the plutonium laboratory adjacent to
8 that.

9 The uranium work, since there were
10 small batches of monocarbide, mononitride, and
11 uranium silicide, they, similar to the pellet work
12 for plutonium, that work consisted of experimental
13 methods to fabricate those compounds into pellets.

14 The plutonium laboratory primarily
15 produced uranium and plutonium monocarbide that
16 was used in the Fermi fast breeder reactor for
17 experimentation purposes. That work studied the
18 physical properties and the use of X-ray
19 diffraction.

20 The work in the second AWE period, you

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1 have air samples from the uranium work -- excuse
2 me. We have air samples from 1959 to 1961. We do
3 not have any external dosimetry for that work.

4 The general area air dust were taken
5 November 1959 and April 1961. Nine of the results
6 are legible and positive. Plutonium air samples
7 are available from June and April 1961, April 1961
8 being shortly after the facility introduced
9 plutonium in March. Those results include both
10 general area and breathing zone samples. And nine
11 of sixteen of those samples were positive.

12 The air sample data we have on those,
13 on both the uranium work and plutonium work, are
14 used to estimate intakes to workers. For the
15 uranium, the general area air samples were
16 evaluated and we used the 95th percentile to be
17 applicable to support workers. And for operators
18 who have been more closely involved with the
19 material, we are doubling that intake.

20 And for plutonium, the air samples are

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1 identified as both general area and breathing
2 zones. And based on the layout of the facility and
3 where the samples were taken, we have a somewhat
4 different approach there doing a favorable
5 interpretation of that data. All the samples were
6 considered to derive an intake.

7 And I should point out the plutonium
8 work, we have gross alpha air sample results, and
9 those results are a mixture of plutonium and
10 uranium.

11 For the external doses, we are using the
12 initial uranium work. We have no dosimetry data.
13 We are using TBD-6000 dose rates to estimate the
14 intake -- excuse me, a dose rate.

15 The plutonium work was started shortly
16 thereafter. We used MCNP to model external doses
17 based on the material that was in process. We have
18 information on the quantities that they had in
19 process at any one time.

20 And we also evaluated X-ray diffraction

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1 that was used to analyze the compounds being
2 formed. And that was done from -- those X-ray
3 diffraction dose rates are based on measurements
4 from Pennsylvania in 1966.

5 The residual period started in 1959.
6 We used a similar approach as we did for the 1943
7 work, using the OTIB-70 air sample results and
8 resuspension. And, likewise, on the external
9 dose, using Federal Guidance Report No. 12 to
10 estimate an external dose.

11 There are a lot more details and I just
12 tried to give a quick overview here of this. So,
13 I'd be glad to answer any questions before we
14 proceed.

15 CHAIR ROESSLER: Thanks, Tom. I think
16 that this is ready to hear from SC&A. But the one
17 thing that I think we should have, and I don't see
18 a slide on it, it was the last slide in your original
19 presentation. Maybe you can verbally discuss
20 NIOSH's summary regarding the ability to do dose

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1 reconstructions.

2 MR. TOMES: Yes, I meant to do that and
3 I didn't have a slide on it.

4 Yes, we've concluded that, based on the
5 information we have on the work that went on and
6 the amount of materials that were handled that
7 these methods are sufficient to estimate doses.
8 So we are recommending no SEC Class for this
9 facility.

10 DR. MAURO: Tom, this is John Mauro.
11 Just a quick question. I'm always interested in
12 the differences between the general air samples and
13 the breathing zone air samples. And I see you have
14 some data on the plutonium values. I haven't
15 looked for it or anything, but is that data
16 available? I sort of keep a record of that kind
17 of information because we run into that very often
18 where internal doses are being reconstructed, and
19 sometimes all you have is general air samples and
20 I'm always interested in seeing the difference

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1 between the two. Are there data available?

2 MR. TOMES: Are you talking about the
3 plutonium data?

4 DR. MAURO: Plutonium data, yes.

5 MR. TOMES: Yes, they're in SRDB
6 Reference 11452.

7 DR. MAURO: Okay, thank you.

8 DR. ANIGSTEIN: John, this is Bob. I
9 can get you that data.

10 DR. MAURO: I appreciate that. Thank
11 you.

12 CHAIR ROESSLER: Okay, any other
13 questions at this time?

14 MEMBER FIELD: Yes, this is Bill. I
15 had the same question about the air sampling data.
16 The other question I have is, how many workers are
17 we talking about here?

18 MR. TOMES: The 1943 work was
19 experimental using a grinder. So, they obviously
20 -- and ten total slugs were handled. So,

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1 obviously, it was a very small number of workers
2 involved with that.

3 The 1959 through '60, early '60s
4 uranium work, that was an unknown amount, but it
5 was a fairly small amount of material involved.

6 For the 1961 through 1967 plutonium
7 work, all that work was done in a small plutonium
8 laboratory and interviews indicated that they
9 operated one shift per day, five days per week.
10 And we have interviewed someone who said he was the
11 one who was -- he was the only one working there
12 fulltime. So, obviously, there would be other
13 people involved in certain activities but we're
14 talking about maybe a handful of people.

15 MEMBER FIELD: Okay, thanks.

16 MEMBER CLAWSON: This is Brad. I was
17 kind of wondering the same thing. Was this
18 plutonium facility, was it under any kind of lock
19 and key or was there any way of not allowing any
20 of the other workforce in there? Do we have any

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1 information on that?

2 MR. TOMES: We have information from
3 multiple interviews and references that it was
4 secured and tightly controlled. And other workers
5 who worked in the laboratory on the fourth floor
6 outside of the plutonium facility said they were
7 not allowed into it and had never entered it because
8 they had it secured. And that seems to be a
9 consistent theme through everybody we interviewed.

10 MEMBER CLAWSON: And on the uranium
11 part, in the early years when they were bringing
12 that in, how long did this work go on, this checking
13 for grinding and different processes? How long
14 are we looking at?

15 (Simultaneous speaking)

16 MR. TOMES: Well, we have shipping
17 records. This was part of a project. DuPont
18 handled a bunch of subcontractors who did various
19 phases of work with the uranium slug process. And
20 part of that involved using lathes to finish grind

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1 the materials, and they were trying to find a method
2 to speed up that process. And centerless grinding
3 was one of the ideas they had.

4 So they sent ten slugs in June, I think
5 it was actually June 1st, in 1943. And they
6 reported back approximately one month later the
7 results of those tests. And we have records that
8 the slugs were shipped back, I believe it was
9 September the 27th. So they were there from
10 basically June through September. And we know of
11 work going on only in June as far as the experiments
12 themselves.

13 MEMBER CLAWSON: Okay, thank you.

14 DR. MAURO: This is John. One
15 question. It might be a silly question. But the
16 X-ray diffraction activities, they had a special
17 room for that. It wasn't in the same area or room
18 where other workers were involved, or let's say
19 working with glove boxes or anything like that?

20 MR. TOMES: That was a different floor.

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1 I believe it was the second floor, but it wasn't
2 on the same floor. There was a separate area in
3 a separate room.

4 DR. MAURO: Okay.

5 CHAIR ROESSLER: I think what John is
6 leading up to -- and I wanted to ask, too -- did
7 any other workers have access to the X-ray
8 diffraction units or was it just the people who were
9 actually doing the work?

10 MR. TOMES: Our interview with -- we
11 went back -- SC&A interviewed one of the workers
12 who operated the equipment. And then as a
13 follow-up a couple of months ago, we also
14 interviewed him for additional information. And
15 he told us that there were three pieces of equipment
16 in the room where the X-ray diffraction unit sat.
17 And he said other people may have entered but no
18 one else worked there. And so basically there were
19 three people, typically, that would be in there.
20 That's approximate, but it was not a routine launch

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1 pad area by the people. I'm not sure there was a
2 positive control on that facility.

3 CHAIR ROESSLER: Okay, any other
4 questions? Then I think we are ready for Bob
5 Anigstein's review. And he has a lengthy paper
6 that came out earlier. And then in April, he
7 presented a very nice Issue Resolution Matrix with
8 his findings and issues, and that's probably a good
9 thing to following along with. Along with the
10 summary of the issues, he has indicated the level
11 of importance of each one of them.

12 So, if everyone can find that, I think,
13 Bob, we are ready to go.

14 **Review of ER and Findings by SC&A, NIOSH's Response to**
15 **SC&A Findings; and Work Group Discussion**

16 DR. ANIGSTEIN: Yeah. Yeah, that is
17 exactly what I had planned to do. Thank you.

18 So I'm going to start. I mean, we have
19 the 50-page report, so I'm not about to read that
20 out loud or go through it in complete detail, but
21 I will refer to it. But I will start off with the

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1 issues matrix.

2 Alright, Issue Number 1. I'll just
3 read it, so if any of the Board Members have it handy
4 on their computers or on paper, it might make it
5 easier to follow. Issue Number 1 is -- now, we're
6 referring to the original ER. "NIOSH failed to
7 prescribe a methodology to assess doses to skin of
8 hands and forearms from X-ray diffraction
9 apparatus."

10 I would like to then simply jump to the
11 conclusion that, in the report that Tom Tomes
12 issued on June 8th, he did in fact prescribe a
13 methodology. And that is that the XRD
14 operators/technicians would be assigned the rad
15 support dose for the glove box workers.
16 Basically, the glove box workers' dose, assuming
17 50 percent exposure.

18 And we find that to be quite bounding,
19 and, therefore, the issue is resolved. The 10.8,
20 I believe, to the skin of the whole body, and 115

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1 to the skin of the hands and forearms seems to be
2 quite bounding for the XRD operators.

3 I don't entirely agree -- there was a
4 separate report that was attached by Elyse Thomas
5 from ORAU which gave a much, much lower dose. We
6 don't entirely agree with that methodology,
7 however, that becomes a moot question because of
8 the doses that NIOSH plans to assign to these
9 workers or to anybody that might have been such a
10 worker.

11 The second issue is NIOSH failed to
12 address thorium as a possible radiation source.
13 So, one worker that was interviewed by NIOSH, and
14 also I interviewed him on behalf of SC&A, did say
15 that somewhere around 1955, in that era, he was
16 doing experimental work with making pellets. The
17 AEC-related work in '59 through '67 was making
18 pellets for experimental use in reactors. They
19 were very small, a couple of centimeters long,
20 about a centimeter in diameter in rough numbers.

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1 And they were both doing uranium and then later they
2 were doing a uranium-plutonium carbide, and that
3 was the nature of the pellet work.

4 Well, this man apparently did something
5 very similar in '55 using thorium. We first said,
6 well, perhaps that thorium was related to weapons
7 work, because at one time there was some
8 experimental work done with mixed thorium-uranium.
9 I believe it was at Fernald. It was the basis of
10 some other work that was with SC&A some years ago.
11 And we felt that perhaps this could be
12 weapons-related.

13 The response that NIOSH had to furnish
14 to that was that it seems -- we can't rule it out
15 totally, but it seems unlikely. There were
16 copious records on uranium and plutonium being
17 shipped to the Carborundum. There were no records
18 of thorium and no evidence of thorium, except this
19 one man's account.

20 However, he seemed to be very clear

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1 about this. And I looked at the interview notes
2 from the ORAU interview and he was very -- and
3 several months later, I interviewed him and it was
4 entirely consistent. That is one way you can --
5 that I judge the veracity of the workers that we
6 are interviewing. In other words, I'm not always
7 perfect after 50 years, and neither is a lot of us,
8 but when they give a very consistent story several
9 times, I tend to say, gee, this person really does
10 seem to have a good recollection.

11 However, he could not say. I asked him
12 if he knew who the client was, and he could not
13 remember who it was being shipped to. So we are
14 willing to accept that it's most likely not
15 weapons-related.

16 However, these facilities at question,
17 that this worker did say the thorium was received
18 as a powder and he said that spills were likely.
19 So if there were spills of thorium and there is no
20 record of thorough decontamination of the

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1 facility, and since thorium and uranium were
2 handled in the same facility, as a matter of fact,
3 NIOSH pointed out in its response that there is a
4 biographical sketch of one of the managers, one of
5 the key people, [identifying information
6 redacted], that's whose name appeared on many of
7 the Carborundum progress reports. And he set up
8 two facilities. He set up a plutonium facility and
9 he set up a facility for uranium and thorium. So
10 it was the same facility that was being used.

11 And consequently, there is definitely
12 a likelihood that there would have been thorium
13 contamination, and that should be accounted for as
14 a source term during the second operational period.

15 Since it was not weapons-related, or
16 rather we are assuming it is not weapons-related,
17 there would not be doses during the second residual
18 period which -- I mean the first residual period,
19 because that would only be the weapons-related
20 work.

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1 However, during the operational
2 period, those thorium residues would come into
3 play. Now, the response, Tom Tomes' response was
4 that this would have been picked up when they did
5 the uranium gross alpha samples. And we agree with
6 that. However, the problem is that the dose
7 conversion, just looking at the effective dose,
8 just using that as a surrogate for the individual
9 organ doses, the effective dose from inhaling
10 thorium Class N, five microns, is about over three
11 times as great as that from U-234, which is used
12 to characterize uranium.

13 So, consequently, even for the alpha,
14 the intake in terms of gross alpha might be based
15 on the air samples. It does not account for the
16 thorium, for the possibility. Yet, some of those
17 alphas are actually from thorium. It should be
18 assigned a higher DCF.

19 So, we don't have an answer to that, but
20 we believe that NIOSH should address that in their

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1 final amended report or whatever document comes out
2 of this review. So, that's Issue Number 2.

3 CHAIR ROESSLER: Bob?

4 DR. ANIGSTEIN: Yes.

5 CHAIR ROESSLER: This is Gen. I'm
6 wondering if it might be better, rather than to go
7 through all of them, just to take each issue one
8 at a time. And I'd actually like to go back to
9 Issue 1, which is X-ray diffraction.

10 I think you said that you gave both your
11 evaluation and then you mentioned NIOSH's
12 response.

13 DR. ANIGSTEIN: Okay.

14 CHAIR ROESSLER: And I think you said
15 that you and SC&A were okay with NIOSH's response.
16 So, for Issue 1 or Finding 1, is that one, do you
17 considered that closed, then?

18 DR. ANIGSTEIN: Say again?

19 CHAIR ROESSLER: Would you consider
20 Issue 1 closed on the X-ray diffraction?

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1 DR. ANIGSTEIN: Yes, Issue 1 is closed.
2 We don't -- I mean, they can make a response but
3 we accept their solution to Issue 1.

4 CHAIR ROESSLER: Okay.

5 MR. KATZ: Okay, this is Ted. I'm
6 sorry. I just want to say, SC&A doesn't close
7 issues. Only the Work Group can close issues.
8 So, their recommendation is to close that issue,
9 but then the Work Group can discuss that.

10 DR. ANIGSTEIN: I stand corrected.

11 CHAIR ROESSLER: But I think in order
12 to do that, we need to follow that through and ask
13 if there is any response then from NIOSH on Issue
14 1 or Finding 1.

15 MR. TOMES: This is Tom. As Dr.
16 Anigstein indicated, we evaluated X-ray
17 diffraction based on comments he made on how we
18 assessed that, and he did come up with the dose
19 values and that is explained in the paper that Elyse
20 Thomas wrote. As indicated, that indicates the

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1 support personnel external doses that we were
2 proposing to use is significantly higher. So that
3 would be our response, to use the higher doses to
4 bound those workers.

5 CHAIR ROESSLER: Are there any
6 questions from the Work Group on that one?

7 MEMBER CLAWSON: Gen, this is Brad.
8 I've got a couple but I'm going to hold off until
9 I get a better taste on what we're doing right here.

10 CHAIR ROESSLER: Okay, so as far as
11 you're concerned, we are still open on that one.
12 Do you need more discussion on Finding 1 right now,
13 Brad? Would this be the time to bring it up?

14 MEMBER CLAWSON: No, I'm just -- you
15 know, I understand what they are doing there but
16 I don't want to also be just throwing a bunch of
17 dose at it. You know, if this is the best that we
18 can do -- I need to think about this a little bit.

19 CHAIR ROESSLER: Okay.

20 MEMBER CLAWSON: We'll go ahead and

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1 keep going.

2 DR. NETON: Brad, this is Jim. Maybe
3 I can give you a little more clarity on this,
4 because I get a little confused when we talk about
5 this as well.

6 What happened here was we came up with
7 a dose that was pretty small for the X-ray
8 diffraction operators, something less than 200
9 millirem per year. And SC&A said, well, there are
10 some issues and parameters and stuff that we could
11 use. And that happens when you do these type of
12 modeling doses. But when we looked at the doses
13 that we're assigning to the people that actually
14 worked with uranium during this period, the skin
15 doses are very large. They are approximating, I
16 think, 11 roentgen per year.

17 And it's been our policy that we would
18 assign -- we can't differentiate who did what,
19 when, when and where. So we would just assume that
20 everybody that had a claim worked with uranium

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1 during that period. And you can't be two places
2 at once. So the uranium dose is going to bound
3 anybody's exposure, even if they worked with X-ray
4 diffraction units.

5 That's the gist of what happened here.

6 DR. ANIGSTEIN: Excuse me, Jim.

7 DR. NETON: Yes.

8 DR. ANIGSTEIN: I think, if my
9 recollection is correct, that the limiting dose,
10 external doses for the glove box workers, are from
11 plutonium, not uranium.

12 DR. NETON: I'm sorry. Whatever it
13 was, it was a larger bounding dose that we would
14 assign.

15 DR. ANIGSTEIN: Yes.

16 DR. NETON: And it far exceeded any
17 reasonable estimate that you could come up with for
18 an X-ray diffraction operator, at least in our
19 opinion. Thanks for the correction, Bob.

20 MEMBER CLAWSON: So, Jim, what you are

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1 telling me is that so you are figuring that by doing
2 this it was going to bound the X-ray diffraction.

3 DR. NETON: Yes. Yes.

4 MEMBER CLAWSON: Okay, that's all I
5 needed, Jim. Thank you. And thanks, Jim. I
6 appreciate that.

7 CHAIR ROESSLER: Okay, so then it
8 sounds to me like --

9 MEMBER FIELD: I had a question. Is
10 NIOSH's response written somewhere or are we just
11 capturing it through discussions?

12 DR. NETON: No, that's reported in our
13 --

14 MEMBER FIELD: In your documents.

15 DR. NETON: Yes.

16 MEMBER FIELD: Okay. So, I guess it is
17 closed based on the response that's in the
18 documents.

19 DR. NETON: No, we responded and SC&A
20 just formally or orally came back and agreed with

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1 our response.

2 MEMBER FIELD: Right.

3 DR. ANIGSTEIN: We did not formally
4 respond to the June 8th report. I'm responding to
5 it now.

6 MEMBER FIELD: Okay.

7 MR. KATZ: Right, that's fine.

8 CHAIR ROESSLER: So we don't -- do we
9 have John Poston on the line yet?

10 MR. KATZ: You don't have John, but you
11 have a quorum. You don't have to wait and get John
12 for this.

13 CHAIR ROESSLER: Thank you. So it
14 sounds like on Issue 1, then, the Work Group
15 concludes that that one is closed. And hearing no
16 objections to that, then I think we can go on to
17 -- I just thought it would be better to take these
18 one at a time, Bob.

19 And then I think we can go on to your
20 discussion on thorium. And I think you had

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1 finished talking. So I think the Work Group then
2 needs to talk about your conclusions on that.

3 MR. KATZ: Well, I think you want to
4 hear back from Tom Tomes first, right?

5 CHAIR ROESSLER: Right. Yeah, Bob has
6 already said what NIOSH concluded in their
7 follow-up report, but, yes, let's hear from Tom.

8 MR. TOMES: Okay, as indicated, Bob did
9 explain the gist of our response, is that we have
10 gone through every available information we have
11 and interviews with workers. And there was
12 indication in multiple accounts that they did some
13 thorium work in 1955. Didn't see anything
14 specifically, other than 1955, and it was in
15 reference to the uranium-thorium laboratory area.
16 And there is no specific information on quantities
17 or whatever. And I speculated in my response that
18 it could have been for the GE -- they had a
19 subcontract with GE. And I do not know if thorium
20 was involved but I could speculate that perhaps it

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1 was from that.

2 They listed a -- Carborundum had issued
3 a report listing all the research work, and that
4 was the one that of the ones that I thought were
5 listed that it could possibly be. And that
6 particular report at that time had the scope of work
7 classified. But we do know that it was possible
8 they could have had some thorium work there for that
9 particular program.

10 So, our assumption is that this was not
11 weapons-related work that should be covered. And
12 I would have to agree with Dr. Anigstein that
13 perhaps we need to look at the interpretation of
14 the uranium air samples of 1959 to see what is the
15 best way to interpret those and whether or not we
16 need to consider thorium.

17 But other than that, I agree with his
18 response that we did not specifically assess those
19 air samples as being thorium.

20 CHAIR ROESSLER: So, your statement

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1 that you would use an effective dose three times
2 as great as the one you proposed, is that something
3 you still need to look at?

4 DR. NETON: Gen, this is Jim. I think
5 I'd like to take maybe a look at the broader picture
6 here, though. I'm kind of reluctant to say that
7 we are going to make up or assume that contamination
8 happened with commercial activities four years
9 later that we are assessing dose for. I think
10 that's kind of a place where we typically don't go.

11 We have no indication of any
12 contamination. So we would just be sort of making
13 up, speculating that there was some. And I'm not
14 sure that's what we really want to do here. We sort
15 of, we acknowledge that it was likely commercial
16 activity, if it did occur. But to come up and
17 assume that all the uranium that's measured in the
18 air sample, the smear, the 1959, are thorium, I
19 think, is not a good place to go.

20 DR. ANIGSTEIN: But there needs to be

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1 some.

2 DR. NETON: Well, no, Bob, because
3 there's no indication there was any. If the people
4 who worked --

5 DR. ANIGSTEIN: We have the worker.
6 The worker who said --

7 DR. NETON: If he said he worked with
8 it and it was residual contamination there, then,
9 I'd say sure. But there is no indication how much
10 they did, how much they spread.

11 DR. ANIGSTEIN: I agree. But unless
12 you ignore that worker's testimony, he says he
13 worked with thorium powder and he told me that
14 spills were likely.

15 DR. NETON: Okay, but he didn't say
16 that they left residual contamination all over the
17 place.

18 DR. ANIGSTEIN: No, of course he
19 didn't, and you wouldn't expect him to.

20 DR. NETON: Right. But I mean, just

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1 because there were spills doesn't mean there was
2 contamination there four years later.

3 DR. ANIGSTEIN: I agree, but we don't
4 know that there wasn't.

5 DR. NETON: Well, we can't prove a
6 negative here, but I don't think -- we don't make
7 up source terms like this, usually. I mean, if
8 somebody worked with something ten years before and
9 it was commercial, we have no indication that there
10 was any activity there at all.

11 DR. ANIGSTEIN: But nobody looks for
12 it.

13 DR. NETON: We don't know that. You
14 don't know that.

15 DR. ANIGSTEIN: No, no, no. There is
16 no report of cleanup. There's no report of
17 somebody saying let's check the thorium.

18 So, generally, the general procedure is
19 you make the -- when in doubt, you make it a
20 claimant-favorable assumption. If you don't know

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1 what the source term is, you assign a source term
2 that's plausible and favorable to the claimant.

3 DR. NETON: I think it's unreasonable,
4 though, to assume that all activity measured --

5 DR. ANIGSTEIN: I wouldn't say -- I
6 agree with you. I agree with you.

7 DR. NETON: And you don't know the
8 original source term. So, what fraction would you
9 take? See, that's the problem.

10 DR. ANIGSTEIN: But to dismiss it
11 entirely doesn't seem reasonable either.

12 MR. TOMES: This is Tom. I would like
13 to point out that we do know that, during the same
14 period, they handled quantities of uranium. And
15 we have information on that. And we even know that
16 when the GE contract was closed out, they
17 transferred some uranium to the AEC contract for
18 the uranium carbide work. There was no mention of
19 thorium at all in those transactions I read about.

20 DR. ANIGSTEIN: It could also -- I

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1 would like to speculate it could also be that the
2 same worker that was interviewed by both parties
3 didn't even realize. He said, at the time he
4 didn't even know thorium was radioactive. So they
5 were not even treating it as radioactive material.

6 He knew uranium was radioactive, but he
7 was -- now he knows thorium was radioactive, but
8 he said at the time he didn't know that. So there
9 may have been differences in the handling. And
10 certainly, if he was the one who was personally
11 manufacturing those pellets, he was the first one
12 who would have been told this is radioactive
13 material, that you have to take the following
14 precautions.

15 So, it's possible that they were just
16 negligent on that score, and, therefore, it would
17 not have been entered into the records. I'm just
18 speculating.

19 MEMBER FIELD: This is Bill. So, as
20 far as you know, this is the individual who has the

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1 most knowledge about these potential activities?

2 DR. ANIGSTEIN: I'm sorry, say again?

3 MEMBER FIELD: Since you only
4 interviewed one person, it sounds like there
5 weren't a whole lot of people that worked in these
6 areas to begin with. Is there someone else that
7 could be interviewed to get more clarity or to see
8 if there's agreement or disagreement on this
9 thorium?

10 DR. ANIGSTEIN: Well, there were only
11 three, from what I could -- my review of the
12 interviews conducted by NIOSH -- there were seven
13 interviews conducted, actually. One was a
14 survivor, so he wouldn't have that much
15 information. And of the remaining six, only three
16 have any knowledge of work with radioactive
17 materials. So, this person was one of three. You
18 might say it's a 33 percent sample.

19 CHAIR ROESSLER: But if he didn't even
20 know thorium was radioactive, to me, it doesn't

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1 seem like he had --

2 DR. ANIGSTEIN: I'm sorry?

3 CHAIR ROESSLER: The worker said
4 didn't realize back then that thorium was
5 radioactive. To me, that means he doesn't know
6 much about thorium and maybe his information was
7 not that reliable.

8 DR. ANIGSTEIN: Well, he was clear that
9 it was thorium. He repeated thorium to both the
10 ORAU interviewer and to myself. So, he was very
11 firm about that. He was very clear about the date.
12 In both cases, he said 1955 or mid-1950s. He was
13 very consistent on that score.

14 And besides, we do have the
15 documentation that this -- I don't know if I'm
16 supposed to mention these names, so I won't -- the
17 [identifying information redacted] engineer whose
18 resume was identified by Tom Tomes in his response,
19 specifically said he set up a facility for handling
20 plutonium and he set up a facility for handling

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1 uranium and thorium. So, clearly, thorium was
2 handled.

3 MEMBER CLAWSON: This is Brad. This
4 isn't unusual. We have run into this at so many
5 facilities and they looked at thorium as really
6 kind of an no-nevermind. So, this isn't anything
7 new, I'm sure we can get our hands around that if
8 we're going to do this. But I don't think we can
9 also dismiss it either.

10 CHAIR ROESSLER: Do we have any
11 precedent in other situations where we have one
12 interviewee with information that perhaps is not
13 supported in any other way? Or does NIOSH have a
14 follow-up that we could do to verify this?

15 MR. TOMES: This is Tom. We have asked
16 several people. We've searched through CATIs for
17 claimants and we've summarized the information we
18 have. And we do not know where else we can find
19 more information. At least, I do not know of any.

20 I would like to point out that whatever

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1 thorium that could've been present would have been
2 relatively low. I'm looking at the air sample
3 results. The 1959 gross alpha air sample results,
4 I'm looking at five of the -- excuse me, six of the
5 seven reported results. One is a control. Five
6 of the six reported results were negative. And
7 then the results in the next series of air sample
8 results for uranium did detect some activity, which
9 was later.

10 So, I mean, there's no indication in the
11 records that, in 1959, that they had a significant
12 airborne hazard.

13 DR. ANIGSTEIN: Would it then be
14 reasonable, despite -- I understand Jim's position
15 about setting a precedent, but if this is a
16 relatively small dose, would it be, for the sake
17 of settling it, would it be reasonable to say
18 perhaps half of it was thorium? And it's not going
19 to give anyone a dose that's off the charts. It's
20 probably going to make a minor contribution, and

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1 yet it will be a plausible, claimant-favorable
2 solution. I'm just suggesting.

3 DR. NETON: This is Jim. I guess we
4 have no basis of why to say half is the right number.

5 DR. ANIGSTEIN: Since thorium and
6 uranium were handled in the same facility, it's
7 just a middle ground. It could 100 percent, it
8 could be zero percent, but 50 percent sounds like
9 a reasonable, an average of the probabilities.
10 This is done in probabilistic work all the time.

11 DR. NETON: Yeah, I understand that
12 we've done this before. I think that this is
13 something that we probably need to think about a
14 little more. This is sort of precedent-setting in
15 my mind. I think we can agree that the answer is
16 somewhere between zero and what the air samples
17 measured. So, in essence, I think that does, in
18 my opinion, kind of qualify for a Site Profile issue
19 and not an SEC issue.

20 DR. ANIGSTEIN: Definitely.

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1 DR. NETON: And for purposes of this
2 discussion, I think we could just agree with a path
3 forward on this and move forward. I'm not
4 comfortable agreeing right now to start adding
5 thorium. I'm not saying we won't but I think we
6 need to think about a little more.

7 CHAIR ROESSLER: Well, are we saying
8 then, that it does not affect the SEC decision but
9 it is a Site Profile issue?

10 DR. NETON: That is what it seems to me
11 to be. That is my belief.

12 CHAIR ROESSLER: And what about SC&A's
13 response on that?

14 DR. ANIGSTEIN: Well, we agree that it
15 is a Site Profile issue.

16 DR. MAURO: Yes, this is John. I agree
17 also.

18 CHAIR ROESSLER: So, the question to
19 the Work Group would be, is this issue closed with
20 regard to the SEC decision.

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1 MEMBER CLAWSON: This is Brad, Gen. I
2 would say that it is, the one that we just captured.
3 You know, make sure that we capture it in the Site
4 Profile and go from there.

5 CHAIR ROESSLER: Okay. Bill?

6 MEMBER FIELD: Yes, the only thing I am
7 looking at is one of the other arguments was the
8 use of thorium needs to be further investigated.
9 It sounds to me, from what I am hearing, is that
10 there is little information to investigate it. Is
11 that NIOSH's view?

12 DR. NETON: This is Jim. I think that
13 is what Tom was indicating. But for the use of
14 thorium, I think we have agreed that it is not
15 AEC-derived, at least we can't determine it is
16 AEC-derived. If it does come up later that it was
17 AEC-derived, then the Department of Labor would
18 have to amend the time period anyway.

19 MEMBER FIELD: Right.

20 DR. NETON: So, the whole point is it

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1 is commercial -- if it did occur, it was commercial
2 activity in the mid-1950s and the whole question
3 right now is whether or not we need to reconstruct
4 that commercial activity during the covered period
5 in '59. And I'm still not 100 percent convinced
6 that that is the way to go but I am open to -- we
7 are open to thinking about that.

8 DR. ANIGSTEIN: Not to be redundant but
9 even regardless of where this came from, if there
10 was a radiation source during the covered period,
11 all radiation sources, regardless of their origin,
12 need to be addressed.

13 DR. NETON: Oh, I agree, Bob. The
14 question in my mind is is it a radiation source that
15 needs to be addressed.

16 DR. ANIGSTEIN: I wasn't sure you were
17 saying that.

18 DR. NETON: Yes, that is what I was
19 saying.

20 CHAIR ROESSLER: Okay, so we are going

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1 to stand on this, then. It appears to me that we
2 can move on because this is not an SEC issue. Am
3 I correct on that?

4 MEMBER CLAWSON: Gen, this is Brad.
5 In my mind, yes, this is not an SEC issue. So, we
6 can resolve it. To me, it is kind of resolved and
7 we will bring it up as a Site Profile issue.

8 CHAIR ROESSLER: Okay. Bill?

9 MEMBER FIELD: I think that is fine.
10 It is kind of weird, though. You are talking about
11 air sampling. If there were spills that took
12 place, you know, we don't know if there was air
13 sampling that took place during the alleged spills
14 or not.

15 So, yes, I am fine with Site Profile.

16 CHAIR ROESSLER: I'm thinking, unless
17 somebody objects, we can move on to Item 3.

18 MEMBER CLAWSON: Gen, this is Brad one
19 more time. Jim made a very good point. If we find
20 out any more information on this, you know we will

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1 work through it and stuff like that.

2 You know, I guess I am just sitting here
3 looking at the sites that I have dealt with and it
4 seems like every one of them we have thorium popping
5 up, especially in the '50s and the '60s era and at
6 Fernald it's popping up a lot more.

7 I just want to make sure that we don't
8 overlook this. I feel good that if we can address
9 this by the Site Profile issue, then I think we can
10 do it. But we will leave this to NIOSH and it can
11 maybe come back to it with us.

12 CHAIR ROESSLER: Okay, I think we can
13 allow a little more thinking time on this. And I
14 think we will just move on to the next issue and
15 we can come back to this later in the discussion
16 today if somebody wants to.

17 MR. KATZ: Are you closing it? I think
18 I heard closing and then you are saying come back
19 to it. But Gen, there is no more information for
20 today.

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1 CHAIR ROESSLER: Yes, I think as far as
2 we are concerned today, as far as an SEC issue, it
3 is closed.

4 MR. KATZ: Okay. Okay, so over to you,
5 Bob.

6 DR. ANIGSTEIN: Okay, Issue number 3,
7 is background radiation, Issue number 3, the
8 strontium-90, I went into the New York Times
9 archives for Carborundum and I found that in 1952
10 they simply said "the Carborundum company in
11 Niagara Falls, New York, had acquired --" this was
12 a press release they had given, "they had acquired
13 five thickness gauges containing strontium-90 to
14 use in their Coated Products Division," basically,
15 better known as sandpaper, at least in this
16 example. And the focus on the gauge was you have
17 the strontium source sitting on one side of the
18 paper and it is processed as it is being coated,
19 and then the detector on the other side. And if
20 the coating got too thick, the signal would go down.

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1 If the coating got too thin, the signal went up.
2 It was an automated feedback loop to control this
3 coating and they were very proud of it. It was a
4 big innovation.

5 So, the finding was this was not
6 mentioned by NIOSH and, therefore, it needs to be
7 addressed. Even though this is not AEC-related
8 but, again, if continued -- it was acquired in '52
9 and if it continued to be in use during the next
10 covered period starting in '59, it would have to
11 be addressed.

12 And NIOSH, in their response, did
13 further research and they found that the Coated
14 Products Division had been moved to a nearby town,
15 Wheatfield, New York, which I think is somewhere
16 near Niagara Falls but it is a different facility.

17 And I confirmed that actually by
18 finding a Niagara Falls Gazette article, which
19 confirmed that the Carborundum Company had several
20 divisions and the Coated Products Division was in

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1 Wheatfield.

2 So, therefore, this seemed like a
3 reasonable issue at the time we brought it up but
4 we agree that NIOSH's response to it, that it was
5 not at a covered facility. And therefore, we would
6 recommend that this issue be closed.

7 CHAIR ROESSLER: Okay, NIOSH? Am I
8 off mute?

9 MR. KATZ: Yes, you are, Gen.

10 CHAIR ROESSLER: Okay, I couldn't
11 remember.

12 Tom or Jim, do you have any comments on
13 that?

14 MR. TOMES: This is Tom. Dr.
15 Anigstein summarized our response fairly well. My
16 conclusion was that it was at the -- I believe it
17 is Wheatfield, New York, plant and that appears to
18 be there was no indication that it was in the
19 Buffalo Avenue location at all.

20 CHAIR ROESSLER: Okay and this is in

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1 the NIOSH report and I guess the Work Group has
2 looked at that. Are we willing to accept this as
3 an item that is closed?

4 MEMBER FIELD: This is Bill. I think
5 it is closed.

6 CHAIR ROESSLER: Brad?

7 MEMBER CLAWSON: It takes me a while to
8 get off mute. Yes, that is closed to me, too.

9 CHAIR ROESSLER: Okay, any other
10 questions, then on Finding 3?

11 Alright, well then, Bob, let's move on
12 to your Issue 4 on medical.

13 DR. ANIGSTEIN: Issue 4 is that NIOSH
14 had -- the ER had not assigned medical X-rays during
15 the first operational period. Based on a
16 statement made by DuPont or the prime contractor
17 that there were no medical issues involved with the
18 uranium grinding. However, according to the NIOSH
19 policy, it didn't have to be medical X-rays as a
20 result of the work. It was simply normal

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1 pre-employment physical, post-employment physical
2 sometimes, and certainly the annual physical.

3 And so the response of Tom Tomes was
4 they will include the medical. They agreed --
5 NIOSH agreed that medical X-rays should be
6 included. And that being the case, there is no
7 more issue.

8 CHAIR ROESSLER: Okay, any comments
9 from NIOSH on that one?

10 MR. TOMES: No, we agree that we should
11 include the X-rays for the first residual period.

12 CHAIR ROESSLER: Okay, Work Group?

13 MEMBER FIELD: Sounds closed.

14 CHAIR ROESSLER: Who was that, Bill?

15 MEMBER FIELD: Yes, it's Bill.

16 CHAIR ROESSLER: Okay, Brad?

17 MEMBER CLAWSON: Yes, I'm in. Yes,
18 that's good.

19 CHAIR ROESSLER: Alright. Then a
20 similar finding for the second operational period.

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1 Bob, would you like to discuss that?

2 DR. ANIGSTEIN: I'm sorry, could you
3 say it again?

4 CHAIR ROESSLER: Okay, so we all agree
5 to close Issue 4, which was the issue about medical
6 X-rays during the first operational period. So,
7 then, let's go on to Issue 5.

8 DR. ANIGSTEIN: Yes, okay. Issue 5 is
9 similar, that the -- well, it is a little more
10 convoluted in that the ER, as I said, they would
11 assume that the medical X-rays would be, we will
12 assume, pre-employment, annual and termination
13 chest screenings. However, in the example DR, the
14 medical X-rays were not included. And again, Tom
15 Tomes' response is that they should be.

16 So, that is satisfactory as far as we
17 are concerned.

18 CHAIR ROESSLER: Okay, Tom, do you want
19 to comment on that?

20 MR. TOMES: Yes, in the example DR

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1 there is not a full best estimate dose and that is
2 all that amounts to that. It was not real clear
3 in the write-up that that is what the case was.
4 That is the case that we intend to include X-rays.

5 CHAIR ROESSLER: Okay, Work Group, any
6 questions or comments, Bill or Brad?

7 MEMBER FIELD: This is Bill. I'm okay
8 with closing.

9 CHAIR ROESSLER: Okay.

10 MEMBER CLAWSON: This is Brad. I'm
11 okay with closing.

12 CHAIR ROESSLER: Okay, we will move on,
13 then, to Issue 6, Bob, which deals with FGR 12.

14 DR. ANIGSTEIN: Right. Okay, in
15 several places, the ER refers to -- they describe
16 scenarios that are based on the job descriptions
17 and source terms in the TBD-6000. However, the
18 prescription for the actual dose conversion
19 factors for external doses are based on the Federal
20 Guidance Report number 12, which is a 1993

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1 documented prepared by ORNL for EPA. And this has
2 been consistent with NIOSH policy to use TBD-6000
3 when applicable. And also, in some cases, it is
4 claimant-unfavorable.

5 Just as background, the FGR 12
6 calculates -- the doses they calculate are in terms
7 of a quantity called effective dose equivalent,
8 which is based on ICRP 30 that is no longer being
9 used and besides, even aside from that, it can't
10 be used. It is already an average, a weighted
11 average of individual organs. So, therefore, it
12 cannot be applied to calculating individual organ
13 doses which the dose reconstructors are required
14 to do.

15 So, consequently, we believe that it
16 should be using the tables in TBD-6000 which
17 specifically address these scenarios. So, we
18 believe that that is what should be used. And
19 again, jumping to the conclusion, Tom Tomes'
20 response is to agree that NIOSH will use TBD-6000,

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1 in which case the issue becomes moot.

2 CHAIR ROESSLER: Okay, Tom, any
3 comments?

4 MR. TOMES: Yes, that is correct. We
5 are saying we need to revise our methods to
6 incorporate the comment.

7 CHAIR ROESSLER: Okay, so basically,
8 you are going to be using TBD-6000 tables that he
9 mentions here instead of FGR 12?

10 MR. TOMES: Yes, ma'am.

11 CHAIR ROESSLER: Okay, Work Group, any
12 comments on that?

13 MEMBER FIELD: This is Bill. No
14 comments.

15 CHAIR ROESSLER: Brad? Brad, you are
16 on mute.

17 MEMBER CLAWSON: Sorry, it takes me a
18 little while to get off mute. I have no issue with
19 this.

20 CHAIR ROESSLER: Okay, any other

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1 comments from anyone else on that? Otherwise,
2 that one is also closed.

3 So, let's move then to the last of the
4 findings, Issue 7.

5 DR. ANIGSTEIN: Okay, Issue number 7 is
6 that normally when we are doing a review, we look
7 at individual cases and we check how NIOSH has
8 reconstructed the dose. Really, we do the case
9 audits. Here, there were no cases to audit because
10 we did audit one case two years ago and it turns
11 out that case is the basis of the SEC. It is the
12 survivors of that deceased worker who filed the SEC
13 petition and, at that time, there were a number of
14 issues, which were largely addressed in the ER.
15 So, that is not really relevant.

16 And therefore, the only other thing was
17 this example DR, which was furnished as a
18 supplement to the ER. And I took four -- there were
19 five organs that were addressed. I looked at four
20 of them. And in each case, we actually found that

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1 the doses we calculated were significantly lower
2 than the doses calculated by NIOSH by maybe
3 differences on the order of 50 percent -- I mean
4 maximum differences, external dose/internal dose.

5 And the response was that, for internal
6 dose, which came from uranium, they had mistakenly
7 used Class F, as in fast, which is not one of the
8 compounds that would be found in this facility and
9 consequently, there were errors in the doses, and
10 the other response was that they used efficiency
11 methods. So, therefore, the dose calculations
12 were approximate, not exact.

13 And our response, my response to that
14 is that may very well be alright in an individual
15 case to use, let's say, if the case clearly not
16 compensable, they can overestimate. They can do
17 a quick DR that deliberately overestimates the dose
18 to show that even with this overestimate, the case
19 is not compensable and, therefore, they don't need
20 to the time doing a very detailed dose

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1 reconstruction.

2 However, this is an example that is to
3 be used for all future dose reconstructions. We
4 believe that it should be done in the more exact,
5 precise manner. And therefore, we cannot verify
6 that this is correct.

7 In each and every case it is
8 claimant-favorable but clearly, for instance, one
9 example of dose to the kidney, for instance, our
10 calculation comes out to a dose of 35 rem and --
11 I'm sorry, 36 rem for the kidney; whereas, the NIOSH
12 dose is 74.7 rem. So, we are talking about over
13 a factor of two discrepancy.

14 So, we would like to see a more detailed
15 exact calculation that we can verify before we sign
16 off on that.

17 MR. KATZ: Bob, could I just make one
18 comment with respect to the purpose of DR examples
19 with Evaluation Reports, the purpose of those is
20 proof of principle, just to be clear. It is really

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1 to show that in fact the doses can be feasibly
2 reconstructed.

3 DR. ANIGSTEIN: Very good. I
4 understand that.

5 MR. KATZ: Okay.

6 DR. ANIGSTEIN: I mean I accept that.

7 See here, we, speaking for SC&A, John
8 Mauro can correct me if I am misspeaking, this is
9 our one opportunity to review both the feasibility
10 of dose reconstruction and also the methodology of
11 dose reconstruction.

12 So, unless we were to have scheduled two
13 separate reviews, one for SEC issues and one for
14 Site Profile issues, I thought it would be
15 appropriate to address it.

16 MR. KATZ: Yes, no harm done, Bob. I
17 am just saying SC&A separately does get tasked to
18 review Site Profiles and TBD matters. So, that
19 does happen independently. But I am just
20 explaining the purpose of these example DRs is

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1 really pretty narrow.

2 DR. ANIGSTEIN: I understand.

3 MR. KATZ: That's all.

4 DR. ANIGSTEIN: Yes, I hear you.

5 MR. KATZ: Okay.

6 DR. ANIGSTEIN: And by the same token,
7 I guess I was saying this is our one opportunity.
8 But by the same token, there was a number of issues
9 -- of items -- well, I guess perhaps I should stop
10 talking because I will allow the Work Group to
11 discuss Finding 7.

12 CHAIR ROESSLER: Well, I think we
13 should also hear from Tom but I mean really the same
14 point, this is not -- although you say until you
15 can verify the results in the sample DR, you cannot
16 conclude that NIOSH can reconstruct doses. To me,
17 that seems like that statement is not pertinent.
18 And I think we should hear from some others on that.

19 MR. TOMES: This is Tom. I would like
20 to add a little bit to the comment on the numbers

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1 difference we had.

2 The external doses, Table 2 of the SC&A
3 report has the numbers by the NIOSH examples and
4 the numbers by SC&A. The external doses are
5 relatively consistent. There are just small
6 differences and I believe some of that can be
7 explained by the appropriate DCF that is being used
8 and some adjustments that need to be made on our
9 part, possibly. And the difference really is the
10 internal doses. The large difference in the
11 kidney is accountable for assuming Type F for the
12 1943 work. And so we overestimated that and that
13 accounts for the large difference.

14 The methods used were not exactly
15 precise, as indicated. And I also want to point
16 out that SC&A, I believe, used DCAL to estimate the
17 internal doses and we used factors from IMBA. So,
18 there are some differences in what we used there.
19 And I assume that these differences in the methods
20 used to estimate the doses account for these minor

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1 fluctuations in the totals. I acknowledge that
2 these numbers are not precise.

3 DR. ANIGSTEIN: I would like to respond
4 to that. I happened to be very much involved in
5 this during the other projects.

6 DCAL is the basis of deriving the ICRP
7 dose conversion factors. And IMBA who uses the
8 identical model used by DCAL, it is just in a more
9 convenient package. And so we go back to the
10 source. Rather than to be duplicating the IMBA
11 run, obviously if you run IMBA with the same
12 parameters, you are going to get the same answers,
13 unless your computer is broken. Whereas, I have
14 compared the DCAL and IMBA results in other cases
15 and I come in within a fraction of a percent.

16 So, I think usually it's explained on
17 the basis on -- DCAL assumes, for instance, the
18 uptake is throughout the year, even if it really
19 isn't and the DCAL model, we haven't adopted DCAL
20 but it actually is more exactly in terms of the

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1 intake. That accounts for like fractions of a
2 percent. So, I don't agree that that is due to
3 that.

4 And the external, specifically the
5 lung, there was a major discrepancy which I cannot
6 explain. We used the -- first we did the lung using
7 the HP10 dose conversion factor, which should have
8 been used, you know OCAS-1, IG-001. And then just
9 to see if we could match the higher number, repeated
10 it using the dose conversion factor that NIOSH
11 indicated they were using and we still didn't get
12 the same number, differences between 17.3 and 19.3.

13 So, there is some discrepancy there.
14 And that is for, I forget what the source was. I
15 don't have the calculation in front of me.

16 And similarly, certainly using Type F,
17 which we didn't know, it then occurred to me that
18 they would have been using Type F, I simply used
19 the Type M, Type S, whichever gave the higher
20 results. Invariably, Type S gives you the higher

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1 result for the lung and Type M will give you the
2 higher dose for other organs because that depends
3 on absorption and circulation.

4 And you get differences. Some of them
5 are small; some of them are -- I call anything over
6 two or three percent to be meaningful different,
7 pointing out there is a problem with the
8 methodology. It doesn't mean that it is going to
9 make a difference in any one individual case, but
10 sometimes it does. Sometimes you get 49.9 percent
11 probability or 50.1 percent probability, then a
12 small difference can make a difference.

13 But as I've pointed out, until we can
14 verify the results, we can't be convinced that the
15 method works. I'm sure NIOSH can find the error
16 and make that correction but at the moment, we have
17 this position that we need to be able to confirm
18 what NIOSH did.

19 CHAIR ROESSLER: And like I said, I
20 don't think I completely understand this. Is this

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1 an SEC issue?

2 MR. TOMES: This is Tom. I didn't
3 fully prepare to go into this, to all the
4 calculations of these doses. I know the source of
5 some of these differences but not every one of them.

6 I think the main topic here on these
7 organ doses is the factors we used, how accurate
8 we calculate them and I do not believe that the
9 particular issues there are SEC issues, which is
10 one of the reasons I did not go into those in great
11 detail to prepare for this meeting.

12 The only thing I would like to say about
13 DCAL, what Dr. Anigstein said about DCAL, I am not
14 sure DCAL estimates factors for a chronic intake.
15 I thought these were modeled in --

16 DR. ANIGSTEIN: Exactly. That's
17 exactly what DCAL does. It has an option of
18 averaging the doses, integrating over time. So,
19 deliberately trying to find an alternate
20 methodology which, in other cases, has worked

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1 exactly.

2 DR. NETON: Yes, this is Jim. I think
3 we are talking about a non-SEC issue here. I mean
4 the whole point that Ted talked about earlier, the
5 example dose reconstructions, using the
6 methodology we described, can you come up with
7 plausibly bounding dose reconstructions.

8 It seems to me that what we used here,
9 we talked about all this, IG-001, TIB-70, TBD-6000,
10 intakes based on air sample data. There is nothing
11 really unusual about these dose reconstructions.
12 They are not based on surrogate data or something
13 like that where we pulled a number out of the air
14 and then tried to apply it.

15 So, I think the discrepancies here can
16 be worked out but I don't think there is any
17 indication that the methodologies we proposed here
18 are not appropriate for the circumstance.

19 There was something else I had in mind
20 here but it slipped my mind. But I think -- oh,

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1 the other issue, SC&A also had a number of
2 observations that can sort of weigh in on the
3 refinement of the dose reconstructions, on how you
4 interpret the air sample data and stuff like that.
5 So, they will be tweaked over time, based on our
6 discussions. So, I don't think that the ultimate
7 dose reconstructions here are the bottom line as
8 they will be tweaked based on some of the other
9 issues that were raised by SC&A. Or possibly
10 tweaked.

11 DR. ANIGSTEIN: So, Jim, do I
12 understand that you are making a commitment that
13 the observations will be addressed?

14 DR. NETON: Oh, absolutely. We can't
15 just let them go. I mean we have to look at the
16 observations and such.

17 DR. ANIGSTEIN: Okay.

18 DR. NETON: So, like I say, that could
19 ultimately end up with slightly different values
20 as well. But I think the bottom line is that the

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1 methodology that we proposed here that we discussed
2 this afternoon are pretty standard techniques. I
3 don't think that they are unusual techniques that
4 need to be questioned, based on are they plausibly
5 bounding.

6 DR. ANIGSTEIN: Okay, I would agree
7 with that.

8 CHAIR ROESSLER: Do we have any
9 comments from John Mauro. Are you still on?

10 DR. MAURO: Oh, yes, I have been
11 listening very carefully and I completely agree
12 with Jim. Sometimes it is so easy to lose sight
13 of whether it is clear that we are dealing with Site
14 Profile issues that can be worked out and there is
15 nothing about the problem that prevents you from
16 performing the dose with sufficient accuracy. I
17 mean to get right to the bottom line, this
18 conversation we are having, there is no doubt that
19 these doses could be performed with sufficient
20 accuracy. However, we find ourselves really

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1 talking about let's make sure we have a document
2 that is tractable, that we understand, that all the
3 assumptions are there. And we are finding
4 differences, as we just discussed, but none of that
5 really affects the SEC aspect of this conversation.
6 But at the same time, we don't want to lose sight
7 of the fact that we do need to mop this up. But
8 that should not interfere with the ability of the
9 Work Group to close out issues as they pertain to
10 an SEC.

11 CHAIR ROESSLER: Okay, I think that
12 would be my conclusion, too. With regard to the
13 SECs and close the issue, I think it has been a
14 productive discussion though. And I think Ted is
15 supporting that conclusion also.

16 Are there any other questions or
17 comments, especially from the Work Group?

18 MEMBER FIELD: Yes, this is Bill. I
19 agree with you, Gen.

20 MEMBER CLAWSON: This is Brad. I

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1 agree.

2 CHAIR ROESSLER: And I think this
3 discussion also includes the observations that
4 SC&A had. Am I correct on that, Bob?

5 DR. ANIGSTEIN: Well, I did not quite
6 follow that. So, we don't need to go into the
7 observations, because some of the observations
8 have not been mentioned yet.

9 DR. MAURO: This is John. Bob, are any
10 of the observations, and your judgment of course
11 is the final judgment to be made by the Work Group,
12 but do any of them seem to have SEC implications
13 or are they all more Site Profile?

14 DR. ANIGSTEIN: No, they are basic --
15 that is why I didn't make them findings because they
16 are all soluble things like, again, use the dose
17 conversion factor for exposure versus the dose
18 conversion factor for HP10. Those are
19 calculational differences, which can
20 certainly -- are easily tractable. In other

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1 words, NIOSH has dose conversion factors in IG-001
2 for exposure in HP10. The prescription in the ER
3 sometimes is mistaken in prescribing the wrong dose
4 conversion factor but that can be converted. That
5 can be fixed with a few key strokes.

6 MR. KATZ: So, Gen, what I would just
7 suggest with the observations is, if the Work
8 Group -- obviously, if the Work Group wants Bob to
9 go do them, that is fine. Otherwise -- or if the
10 NIOSH folks need clarification on any of the
11 observations, that would be another reason to
12 discuss them now.

13 Otherwise, it seems like NIOSH is going
14 to ultimately have to sort of revise and put out
15 their TBD, their, in effect, TBD procedure methods
16 for dose reconstruction, taking into account these
17 things. I mean we would be addressing these
18 observations then. And so we could have another
19 meeting of the Work Group to make sure that all that
20 got buttoned up correctly. But you can do it

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1 however you want here.

2 CHAIR ROESSLER: Okay, well I think if
3 everybody on the Work Group and SC&A and NIOSH has
4 all the written material on the observations, I
5 would think for the purposes of coming to the Board
6 with a recommendation on this SEC, we have
7 completed our work to do. Am I correct on that?
8 I think we have closed every issue and I think all
9 Board Members present have agreed that they are
10 closed.

11 MR. KATZ: Yes, I think then the other
12 thing to do, though, for buttoning up, I don't know
13 whether the petitioners joined this Work Group
14 meeting or not. But if they have and they want to
15 speak to the Evaluation Report or the SC&A reports
16 and so on, now would be an opportunity for them to
17 do that. They would also have an opportunity to
18 speak at the Board meeting when the Work Group
19 presents its results.

20 CHAIR ROESSLER: Okay, are there any

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1 petitioners on the line who would like to speak?

2 MR. KATZ: Okay, they weren't on the
3 line at the beginning of this call and we never
4 heard back from Josh, who handles these matters
5 with petitioners, saying that they would be joining
6 us.

7 CHAIR ROESSLER: So, what I would like
8 to do is include John Poston. Even though you said
9 we have a quorum, I think I would like to include
10 him on this discussion and then I can write up
11 something to present to the Board at the next
12 meeting. I will clearly need some help in doing
13 that and I will probably call on Tom and Bob to get
14 some help and then I will pass it by the Work Group.

15 MR. KATZ: Yes, that sounds good. I
16 mean I think Tom's summary presentation is one
17 piece of that already that I think is very nice.
18 And then you would need a summary of the SC&A review
19 and the resolution of each of these.

20 I mean normally, we would have SC&A sort

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1 of draft up that summary presentation for you and
2 then you could review it. Gen, if that works for
3 you I think they are happy to do that.

4 CHAIR ROESSLER: That works for me.
5 If SC&A could do that, that would be fine.

6 DR. ANIGSTEIN: Okay, so you would like
7 us to prepare a draft presentation for the Board?

8 MR. KATZ: Well, yes, Bob, taking into
9 account Tom's presentation, which is a nice summary
10 of the ER, of the petition and the ER. And then
11 if you do a summary, Bob, of the review by SC&A and
12 the resolution by the Work Group and get it to Gen,
13 she review them but that would be a great start for
14 her.

15 DR. ANIGSTEIN: May I suggest a
16 solution to this? We have the matrix and the
17 matrix has room for expansion of each issue. So,
18 what if I simply continue in the matrix what was
19 discussed and what was decided?

20 MR. KATZ: That's fine, Bob, but

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1 actually, we want a PowerPoint presentation. So,
2 if you can convert that. I mean it is good to keep
3 a record in the matrix, so I agree with updating
4 that. But also -- I mean here is what you need to
5 do Bob, or someone else at SC&A can do it for you
6 or however, but we need a draft PowerPoint
7 presentation.

8 DR. ANIGSTEIN: You want like a
9 PowerPoint presentation?

10 MR. KATZ: Yes.

11 DR. ANIGSTEIN: Oh, okay.

12 MR. KATZ: There are plenty of examples
13 from others at SC&A who have done this. John
14 Stiver does this all the time. So, he can sort of
15 set you up the template for that. We do this all
16 the time.

17 DR. ANIGSTEIN: Okay, again, I'm sorry
18 to keep asking the same question. So, you would
19 like both an update of the matrix and a PowerPoint
20 or do you want a summary report?

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1 MR. KATZ: Correct. No, correct.
2 Just an update of the matrix is fine and then a
3 PowerPoint presentation. That covers it. And
4 again, Bob, it doesn't have to be you. You can be
5 involved without having to do the whole
6 presentation.

7 DR. ANIGSTEIN: I'm the lead on this.
8 So, I would be the one doing it.

9 CHAIR ROESSLER: And then we should
10 talk about timing on this --

11 MR. KATZ: The Board meeting is not
12 until November. And this is really not
13 appropriate, I think, for the teleconference
14 because the Board hasn't dealt with this site in
15 a long time and is not sort of mostly ready to deal
16 with this one. So, November.

17 Getting a presentation done, you know,
18 we have quite a bit of time but I would just suggest,
19 while it is fresh, it is not a bad thing to get it
20 done in the next month and a half or so.

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1 DR. MAURO: Ted, this is John. Just a
2 quick question. For the slide presentation now,
3 to what degree would you like us to present those
4 Site Profile issues that are still in play or do
5 we just limit it to the conversations and the
6 resolutions of the matters that we have discussed
7 today?

8 MR. KATZ: Yes, normally, we just do
9 the SEC issues and then we can have a slide just
10 identifying that there are X number of matters that
11 are being addressed in TBD revision.

12 DR. NETON: Ted, this is Jim. I do
13 think, based on our experience at the last Board
14 meeting, though, we need to put some flesh around
15 the Site Profile issues, why they were decided to
16 be Site Profile issues.

17 MR. KATZ: Yes, right. But I mean you
18 have -- all these findings -- you know, we didn't
19 go into the observations but all the other stuff
20 you will have a robust discussion at the Board

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1 meeting. So, that will be covered.

2 I am just talking about with the
3 remaining observations.

4 DR. NETON: Oh, okay. Yes.

5 MR. KATZ: I would think you can
6 summarize that pretty briefly, just that there are
7 a number of observations and capture them however
8 you want but you don't need to spend much time with
9 the Board on that.

10 DR. ANIGSTEIN: Now, in the slide show,
11 do you want all seven issues listed, even the ones
12 that have been closed?

13 MR. KATZ: Oh, yes. I mean for the
14 presentation, you want to go finding by finding.
15 Here is the finding and here is how it was closed.

16 DR. ANIGSTEIN: Understood.

17 MR. KATZ: Yes, absolutely. Thanks,
18 Bob.

19 CHAIR ROESSLER: And then we can also
20 maybe say that the Work Group will meet again to

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1 discuss the other issues.

2 MR. KATZ: Yes, I think that if NIOSH
3 tells us that they are ready and that they have
4 finished the revision of the Site Profile, in
5 effect, the DR methods, then we will have a Work
6 Group meeting to button that up.

7 CHAIR ROESSLER: So, when we get the
8 rough draft PowerPoint presentation, then the
9 whole Work Group will take a look at that.

10 MR. KATZ: Yes, we will circulate that
11 to the whole Work Group, exactly.

12 CHAIR ROESSLER: Okay. Well, okay, is
13 there anything else on the table today or have we
14 completed our task?

15 MR. TOMES: This is Tom. Dr.
16 Roessler, on the slide presentation, would you like
17 me to edit that to include the final slide that you
18 mentioned? I can do a revision to that to include
19 the table that you --

20 CHAIR ROESSLER: I think that would be

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1 helpful for the record to have that in there.

2 MR. KATZ: Yes, and Tom, that is pretty
3 standard for NIOSH SEC presentations. I know this
4 was already presented to the Board but then it has
5 been quite a while. So, that is helpful.

6 MR. TOMES: So, I will send you an
7 updated presentation.

8 MR. KATZ: Right and, Tom, that is your
9 presentation. So, the way we would work this at
10 the Board meeting, is you would give your
11 presentation. It would just be briefer than the
12 first time around because it would be this version
13 and then the Work Group would go into theirs.

14 MR. TOMES: Alright.

15 DR. ANIGSTEIN: Ted? I have a
16 question for Ted, as well as for the Work Group.

17 So to what extent would SC&A be
18 participating in that November Board meeting?

19 MR. KATZ: So, you would be there on the
20 phone or however to answer questions. I think Gen

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1 would present.

2 DR. ANIGSTEIN: So, we usually have our
3 usual representation, John Stiver, of course.

4 MR. KATZ: Yes, you always have John
5 and Joe and sometimes Ron and Bob are there, too.
6 But then people can be on the phone, too.

7 DR. ANIGSTEIN: Right. We would not
8 be needed in person.

9 MR. KATZ: No, you don't have to go in
10 person, Bob.

11 DR. ANIGSTEIN: Right, okay.

12 CHAIR ROESSLER: Well, isn't the next
13 Board meeting -- let me see.

14 MR. KATZ: It is November. It is the
15 end of November and then the first day of December.

16 CHAIR ROESSLER: Is there a
17 teleconference in between?

18 MR. KATZ: Yes, the teleconference but
19 we won't deal with this at the teleconference. It
20 is just a report. Usually, you'll just say that

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1 the Work Group met and then at the November meeting.

2 CHAIR ROESSLER: Okay. So, this will
3 be the November meeting in Santa Fe, if that is what
4 we decide.

5 MR. KATZ: Yes.

6 CHAIR ROESSLER: Okay. Alright,
7 anything else?

8 MEMBER CLAWSON: Gen, this is Brad. I
9 am just going to tell Bob that he could always start
10 out with John Mauro's famous line "let me paint you
11 a picture," and that would help us all.

12 (Laughter.)

13 John, that was done with love, by the
14 way.

15 DR. MAURO: I know that. I felt it.

16 **Adjourn**

17 MR. KATZ: Okay, so I think we can
18 adjourn, Gen.

19 CHAIR ROESSLER: Okay, I think so, too.
20 Thanks.

1 MR. KATZ: And thanks to everybody for
2 a very orderly and clear meeting.

3 CHAIR ROESSLER: Thank you, Bob, for
4 your matrix. That was very helpful.

5 MEMBER FIELD: Very good.

6 CHAIR ROESSLER: Okay.

7 MR. KATZ: Bye-bye, everyone.

8 (Whereupon, the above-entitled matter
9 went off the record at 11:33 a.m.)

10

11

12