

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

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BLOCKSON CHEMICAL WORK GROUP

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TUESDAY
JUNE 28, 2016

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The Work Group convened via teleconference at 11:00 a.m. Eastern Time, Wanda Munn, Chair, presiding.

PRESENT:

WANDA MUNN, Chair
BRADLEY P. CLAWSON, Member
JAMES M. MELIUS, Member
GENEVIEVE S. ROESSLER, Member

This transcript of the Advisory Board on Radiation and Worker Health, Blockson Chemical Work Group, has been reviewed for concerns under the Privacy Act (5 U.S.C. § 552a) and personally identifiable information has been redacted as necessary. The transcript, however, has not been reviewed and certified by the Chair of the Chapman Valve Work Group for accuracy at this time. The reader should be cautioned that this transcript is for information only and is subject to change.

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ALSO PRESENT:

TED KATZ, Designated Federal Official

NANCY ADAMS, NIOSH Contractor

TERRIE BARRIE

BOB BARTON, SC&A

RON BUCHANAN, SC&A

JENNY LIN, HHS

JOHN MAURO, SC&A

AMY MELDRUM, SC&A

JIM NETON, DCAS

MUTTY SHARFI, ORAU Team

TOM TOMES, DCAS

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

2 11:00 a.m.

3 MR. KATZ: Welcome, everyone. This is
4 the Advisory Board of Radiation Worker Health.
5 It's the Blockson Work Group, Blockson Chemical.

6 Our teleconference today, the agenda
7 for the meeting is posted on the CDC NIOSH website
8 under the Board section under schedule of meetings,
9 today's date.

10 And the agenda is very simple. It's
11 hardly worth going to for anyone who might not have
12 it because we're basically just running through the
13 SC&A review of the SEC evaluation by NIOSH.

14 And there's been some back and forth,
15 and all those documents with the back and forth are
16 posted there. So it would be worth going there if
17 you want to see the documents themselves which will
18 be discussed in a summary form today in this
19 meeting.

20 And then plans for the August Board
21 meeting depending on how today's meeting goes,

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1 whether we need another one, what have you.

2 So, for running the roster here I have
3 all the Board Members on this Work Group present.
4 And I can just say that that is Wanda is the Chair,
5 Wanda Munn, Dr. Melius, Brad Clawson, Gen Roessler,
6 and I should say Dr. Roessler. None have
7 conflicts of interest. I don't think they need to
8 speak to that. And we can move right on to doing
9 roll call for NIOSH, ORAU and SC&A, starting with
10 NIOSH ORAU.

11 (Roll call.)

12 MR. KATZ: Okay, let me note for
13 everyone, as usual, please mute your phones except
14 when you're addressing the group. And press *6 to
15 mute your phone for this line, and *6 to take
16 yourself off of mute.

17 And Wanda, it's your meeting.

18 CHAIR MUNN: Thank you much, Ted. And
19 thank you all for being here this morning.

20 We are extremely fortunate today I
21 believe because the material we are going to

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1 address is straightforward.

2 More importantly, every Member of this
3 Working Group is a Member that has been a part of
4 the Working Group, or a part of the activities that
5 surround Blockson Chemical since its inception,
6 and that's a rare thing in our particular realm of
7 activities.

8 It makes it much, much easier for the
9 people involved I believe because we are all not
10 just vaguely familiar but intimately familiar with
11 the issues at hand and how this has progressed.

12 Just in order to cover all the ground
13 that I believe is helpful for us, just to remind
14 you there are two petitions that have been filed
15 for SEC with respect to this particular site.

16 Petition 58 which covered March '51 to
17 June 1960 was granted.

18 Petition 225 from July 1960 to 1991 has
19 been denied on the basis of the fact that the agency
20 maintains its firm ability to be able to adequately
21 compute any exposures that may have occurred during

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1 that period of time.

2 That's what we're talking about right
3 now is the questions that remain with respect to
4 petition 225.

5 And thanks to Ted for mentioning that
6 we have a piece of correspondence from one of the
7 petitioners. That correspondence should have
8 been received by you earlier. And again, this was
9 forwarded to us from a secondary person.

10 But I'm assuming that since all of us
11 are familiar with the material that we have
12 thoroughly reviewed the documents that have been
13 set forth for this particular agenda, and that we
14 have no outstanding questions about any of those,
15 actually the five findings and one observation,
16 with which this material is concerned.

17 I need to ask one question before we
18 begin. In the event that we do need material up
19 on the screen for our Live Meeting screen who's
20 going to be handling that? Tom, are you going to
21 be doing that?

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1 MR. TOMES: I didn't plan to. I do
2 have Live Meeting pulled up.

3 CHAIR MUNN: And that's alright, I just
4 wanted to make sure. I wanted to try to identify
5 whether anyone was actually doing that. And I'm
6 not hearing any eager voices springing forth.

7 MR. KATZ: Right, this is Ted. I
8 didn't think Live Meeting was necessary for today
9 considering the limited documents.

10 CHAIR MUNN: Yes, considering the
11 background that was just given I suspect that that
12 will be the case.

13 But just wanted to make sure in the
14 event that we did need to use it that someone was
15 onboard for that. But I feel fairly sure that we
16 won't need to.

17 Now, the first -- in addressing the
18 issues that are before us, given the background
19 that I've just reviewed my first question is does
20 any one of the Board Members have a specific
21 outstanding question still in their minds about any

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1 of these findings or the observation that you feel
2 we need to cover more thoroughly than the others?

3 Do you have outstanding questions right
4 now other than those that have been addressed in
5 the material before us?

6 MEMBER ROESSLER: I have none.

7 CHAIR MUNN: Alright, hearing none,
8 then I suggest that we approach this in as thorough
9 but as direct and simplistic manner as possible.

10 If anyone has any objection to my
11 suggestions please do let me know.

12 I would suggest that what we do at this
13 point is ask SC&A to begin the presentation for us
14 by going through their most recent document on the
15 individual concerns that we have because we have
16 the NIOSH response to the concerns that were
17 expressed.

18 And we have as a final document
19 Blockson's essential review of both their original
20 findings and NIOSH responses.

21 Since I have not heard anyone indicate

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1 that they have questions about either of those
2 documents then it seems most complete and simple
3 from my perspective to simply address the most
4 recent last document which is the response from
5 SC&A to the NIOSH material.

6 Now, if anyone has any concern with that
7 speak now and we'll address it in whatever way is
8 most in your view appropriate to do.

9 MR. KATZ: So, Wanda, this is Ted. I'm
10 not sure, I may be saying the same thing as you,
11 but I think it's helpful if -- and that's fine, John
12 can certainly ably kick this all off with each of
13 the findings.

14 I think it's helpful if he gives at
15 least a very brief summary of what the finding was,
16 and NIOSH's response, and then his response to
17 that. So there's the whole story and not an
18 abbreviated or just the back end of the story.

19 Otherwise it just makes it very hard for
20 someone following with the transcript to make sense
21 of it all without having to refer to other

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1 documents.

2 So I would suggest that John give some
3 -- and it can be very brief, but a summary of what
4 the finding was, how NIOSH responded, and then
5 where SC&A stands with that.

6 CHAIR MUNN: You're saying the same
7 thing as I thought I was saying.

8 MR. KATZ: Okay.

9 CHAIR MUNN: But thank you, you've
10 articulated it much more concisely. And that's
11 essentially what I was suggesting.

12 Is there any concern with that
13 approach? If not, let's do that. I'm assuming,
14 John Mauro, that you're going to lead the pack on
15 this.

16 DR. MAURO: Yes, I'd be glad to and I'm
17 happy to be speaking with all of you today.

18 I'll serve as the MC for SC&A. The team
19 that worked on this from the beginning was Bob
20 Barton and Amy Meldrum, both of whom are on the
21 phone.

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1 And I'll kick it off and give you the
2 overview, and I think I'd like Bob and Amy to
3 certainly step in at any time to provide more
4 clarification and to get into the nuts and bolts.

5 The big picture is as we all know
6 Blockson had received an SEC up through 1960 and
7 during the AWE operations period. We're talking
8 now about the SEC petition and Evaluation Report
9 that covers post-1960 or the residual period.

10 And what transpired was as you pointed
11 out NIOSH did prepare an Evaluation Report
12 recommending denial. SC&A was asked to review
13 that.

14 We did come back with a number of
15 observations and comments. By the way, it's very
16 convenient if you folks have in front of you the
17 June 15 memorandum, 2016, that SC&A prepared.

18 This is the last work product and it
19 represents the end of a chain of exchanges of White
20 Papers, et cetera. And it would be useful to have
21 that in front of you as we speak to this matter.

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1 Basically what we have here is an
2 exchange of White Papers and that the last step in
3 the process is NIOSH responded to our comments with
4 the White Paper.

5 And then we reviewed it and responded
6 to their comments. And that's contained in the
7 June 15, 2016, memorandum.

8 And one of the things that's important
9 to put forth is that in SC&A's opinion the matters
10 that are before us that we'll be talking about fall
11 more into the category of what we believe to be Site
12 Profile issues.

13 Of course that judgment is always made
14 by the Board, but SC&A views these as technical
15 issues that can be resolved where we do have things,
16 and you'll see we do have some items here that we
17 believe do need to remain in progress.

18 But we also have some items that we
19 would like to convert to observations which are
20 really not of great substance, but it would help
21 make for a better document if these issues weren't

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1 discussed.

2 With that I will begin with finding
3 number 1. And if you folks are looking at it, this
4 has to do with the approach that NIOSH used
5 conceptually.

6 This has to do with deriving the
7 external exposures experienced by workers during
8 the residual period at Blockson.

9 And the way in which NIOSH approached
10 the problem was to use available gamma survey data
11 expressed in microR per hour to characterize the
12 nature of the background radioactivity in the
13 various work areas during the residual period.

14 And they came up with -- they have data.
15 And they ended up using a particular distribution
16 of exposures that in our opinion are very
17 reasonable and quite claimant-favorable without
18 getting into the nuts and bolts. We could
19 certainly -- vertical, but let's just say that.

20 So we think it's a scientifically sound
21 and claimant-favorable approach the way they came

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1 at assigning external exposure to penetrating
2 radiation for the residual period.

3 But we did raise an issue that there was
4 a consistency question we had between the strategy
5 that was adopted for Blockson as compared to the
6 approach that was used at Simonds Saw where -- both
7 of which are claimant-favorable.

8 Simonds Saw was quite a bit more
9 claimant-favorable. In essence for Simonds Saw,
10 same problem, residual period, external exposure
11 where there are some readings data.

12 At Simonds Saw they used basically the
13 highest observed measurement of the surveys that
14 were performed, while at Blockson they used a
15 distribution that was certainly
16 claimant-favorable, but not to the same degree as
17 Simonds Saw.

18 And NIOSH's position is that, well,
19 there was good reason for that. And the essence
20 of their reason conceptually again is that their
21 data set was a lot more complete at Simonds Saw and

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1 the places, the locations where the residual
2 contamination that gave you the elevated radiation
3 fields at Simonds Saw were areas that really could
4 have been occupied for extended periods of time by
5 workers.

6 As opposed to the data from Blockson
7 which is quite limited, most of which or the vast
8 majority of the measurements were within the
9 natural background readings of the survey
10 instruments.

11 And when they did have somewhat
12 elevated readings they were not widespread and they
13 were not located necessarily in areas where you
14 would expect workers to be present for a long period
15 of time.

16 And we looked at that and our takeaway
17 is, you know, that's a pretty good argument.

18 And Bob, certainly step in, but I think
19 that we're convinced that though there's apparent
20 inconsistency in how the assignments of exposure
21 were done at Simonds Saw & Steel versus Blockson

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1 NIOSH's explanation seems to be reasonable and they
2 fall in the right place.

3 They were a little bit more
4 conservative at Simonds Saw, but they gave their
5 reasons and we feel that the reasons are -- and we
6 looked at it pretty closely.

7 If you look at our write-up we looked
8 at it pretty closely. Yes, we concur that there's
9 good reason for -- so it's not inconsistent. There
10 was good reason why they chose to be a little bit
11 more conservative at Simonds Saw.

12 Bob, would you like to add anything, or
13 did I basically cover that pretty well?

14 MR. BARTON: It was pretty good, John,
15 but I think this one was mine so I'll own it a little
16 bit here.

17 DR. MAURO: Oh, sure.

18 MR. BARTON: It was no accident that
19 the comparison was made to Simonds because I was
20 involved in that as well.

21 It just kind of, you know, didn't raise

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1 red flags. We looked at it and said, okay well you
2 know, it seems like during the residual period at
3 a lot of these sites because the doses are generally
4 low we kind of just go for a real maximizing
5 approach which wasn't done here at Blockson.

6 Basically the distribution was
7 developed based on the highest hot spot being in
8 the 95th percentile and your median value being
9 essentially the background of the instrument.

10 And so we just, we questioned that and
11 finding 1 actually had two parts. The second part
12 I think we'll get into in a little bit.

13 So we all strive for consistency in the
14 program. You want to use the same approach for
15 every site. That's why we kind of brought it up.

16 In NIOSH's response, and I'll certainly
17 give them a chance to talk about it, it was
18 basically posited that you wouldn't have a worker,
19 any single worker that would be around that hot
20 spot.

21 And if you look at our memo I think it's

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1 circled in red in Figure 1. There's a spot on the
2 concrete floor in the main room.

3 But as John kind of said, most of the
4 measurements, I think there were about 70, were
5 right at background. I think there were only seven
6 that actually registered a positive external dose.

7 So, we're kind of in this situation
8 where, and John said it, in writing our review it's
9 perfectly reasonable and claimant-favorable what
10 NIOSH has done. The question was whether it was
11 consistent with I guess the current paradigm that's
12 going.

13 And really I kind of put it in the
14 context of the new implementation guide which has
15 been developed recently about assigning coworker
16 doses.

17 And this is essentially what you're
18 doing. It's a surrogate dose because we don't know
19 what they were actually exposed to.

20 And really that pretty much says. If
21 you're a plant worker you get the upper end of the

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1 distribution assigned as a constant. And if you
2 were more administrative then maybe you'd get a
3 distribution with a GSD 9.

4 So, that's really where we were coming
5 from. I'd like to hear Tom talk because the main
6 concern was would you have a worker that could
7 potentially be at that hot spot for a significant
8 amount of time.

9 Because that was the rationale at
10 Simonds for using a value that was even higher than
11 the 95th percentile for that plant assigned as a
12 constant because it could have happened that you
13 had a worker there that their job was to pretty much
14 be in that area of the plant the entire day for the
15 entire year. And that's why it was a feasible
16 thing to assign that really high value to that
17 worker.

18 It sounds like that is not the case at
19 this particular plant. So I'd kind of like to hear
20 a little bit more about that.

21 DR. NETON: This is Jim. I'll start

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1 off and maybe Tom can chime in if he feels I'm not
2 covering it properly.

3 I think SC&A's take, especially John
4 Mauro's take on this was pretty spot on.

5 It has to do with the nature of the
6 distributions of the measurements. Simonds Saw &
7 Steel as I think John alluded to was fairly
8 generally contaminated throughout. Measurements
9 like 40 microR per hour, 80, 50. So it was a
10 generally widespread contamination as a result of
11 AWE operations that were AEC-derived for sure.

12 Blockson on the other hand had 70
13 measurements or 69, I can't remember the exact
14 number, only 7 of which were positive. The other
15 ones were indicated to be at background levels.

16 So the external gamma and beta exposure
17 rates throughout that building 55 were not
18 distinguishable from background with 7 exceptions.

19 And after we responded to SC&A's review
20 we went back and looked at the seven positive ones.

21 In fact, two of the positive ones were taken inside

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1 either a pipe or inside a tank which is really not
2 appropriate for deriving an external exposure
3 measurement for people working in the plant.

4 If you discount those there's only five
5 positives. And four out of the five were below
6 0.005.

7 So there's this one outlier that was 0.2
8 which was a hot spot. Right next to that hot spot
9 it was back down to background level so there must
10 have been a spill I think of probably uranium there
11 because there was I think 10 to the sixth dpm per
12 100 square centimeters contamination also measured
13 there.

14 So, there's just this one isolated
15 spot. And you really can't fit a distribution to
16 those values.

17 I looked at it this morning and if you
18 discount the two that aren't really relevant in my
19 opinion to external exposure reconstruction there
20 is no distribution.

21 You have these very, very low values and

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1 then this one 0.2 outlier. And we just felt it was
2 appropriate to assign the 0.03 as the median value.

3 But we do allow for the fact that the
4 0.2 is the 95th percentile of that distribution,
5 so therefore 5 percent of the time a person could
6 be exposed up to 0.2 mR per hour.

7 And we feel that's a fairly reasonable
8 approach to dealing with this unique -- not unique,
9 but the set of data at Blockson.

10 That's it in a nutshell.

11 MR. BARTON: And Jim, this is Bob.
12 Like we said, I mean we agreed and we wrote that
13 up in our SEC review that it's a perfectly
14 reasonable and claimant-favorable way to go about
15 it.

16 It just occurred to us that at certain
17 other sites, we used Simonds as the example, it's
18 really a maximizing approach that was taken.

19 So we questioned whether that might be
20 appropriate at Blockson and it sounds like based
21 on the way workers moved about the facility it's

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1 not actually reasonable to assume anyone was
2 exposed to that hot spot.

3 DR. NETON: If you did count those two
4 samples I talked about the 0.03 value is the 93rd
5 percentile in the distribution.

6 So that's pretty representative of what
7 I feel the workers would be exposed to working
8 around the plant with the exception of the hot spot.

9 Which again we don't discount it. We
10 allow for it being the 95th percentile. So 5
11 percent of the time a worker could be standing at
12 that hot spot.

13 MR. BARTON: I don't disagree with any
14 of that, and I really don't want to belabor this
15 point because like we said, the approach they've
16 taken was reasonable.

17 We thought maybe a little bit of
18 discussion about consistency, but in this case it
19 doesn't seem to apply based on the type of facility
20 it was, the extent of the contamination and the fact
21 that it's just not reasonable that you'd have

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1 someone -- the hot spot was on the floor next to
2 one of the tanks, I believe. And so it's probably
3 not reasonable that someone was just standing there
4 all day. I don't know what they'd be doing.

5 I think it's reasonable. I think it
6 was worth discussing and bringing up. Certainly
7 I'd be happy to answer any questions that the Work
8 Group may have about it.

9 We just wanted to point out that at
10 other sites during the residual period sometimes
11 the maximizing approach used as a constant was
12 employed. Simonds was one example.

13 Another one that we were reading about
14 was GSI where they used a vacuum cleaner as the
15 maximizing approach because that gave the highest
16 reading, and it was assigned as a constant just to
17 sufficiently bound the approach since the doses
18 actually weren't that high anyway even if you used
19 the highest value observed.

20 So that's why we brought it up. What
21 NIOSH is doing here is perfectly reasonable.

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1 I don't know if the Work Group wants to
2 continue discussing this, but like we said, we
3 think what NIOSH is doing is reasonable.

4 We just wanted to point out that at
5 other sites they did use a bounding value of the
6 highest measured result essentially.

7 CHAIR MUNN: I thank all of you. It
8 seems to me to be a very thorough and complete
9 discussion.

10 MEMBER ROESSLER: Wanda?

11 CHAIR MUNN: Yes?

12 MEMBER ROESSLER: Yes, I didn't know if
13 I was on mute. This is Gen.

14 I think it's very important to have
15 looked at the inconsistency between sites and to
16 have gone through it so thoroughly.

17 So I think we've concluded this one, but
18 I think having it on the record is really quite
19 important.

20 CHAIR MUNN: Thank you, Gen. I
21 appreciate hearing that from you, especially since

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1 you're so intimately familiar with both of the
2 sites. Thanks.

3 Anyone else have other comments?
4 Alright, let's move on.

5 MR. KATZ: Well, before you move on I
6 think the Work Group needs to decide are you closing
7 this?

8 CHAIR MUNN: I can see no reason why we
9 are not. I haven't called for that specifically.

10 I would recommend that we do close this
11 as having been thoroughly discussed by both the
12 agency and by the contractor.

13 If there are any negative feelings
14 about that? If not, we will consider finding 1
15 closed. Anyone with any concerns speak now,
16 please.

17 MR. BARTON: Well, Wanda, this is Bob.
18 That was kind of the first part of finding 1.
19 There's actually kind of two parts to it.

20 The second part was what work duration
21 you actually assume when you're assigning these

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1 external doses. So one was the external dose rate
2 and one was how many hours per year are we going
3 to assign to the worker.

4 Currently it's 2,000 hours per year
5 which is the standard as we all know. However,
6 when we went in and we looked at the CATI reports
7 for workers at Blockson, for those that actually
8 reported information on whether they worked
9 overtime or not over 90 percent reported that they
10 worked overtime.

11 So we felt that given that sort of
12 evidence from the claimants that the 2,000 hour
13 assumption may not be appropriate, and that
14 overtime work might need to be accounted for as has
15 been done at other sites as well.

16 So that was the second part of finding
17 1.

18 DR. MAURO: I'd like to add something
19 to that which I believe is important in terms of
20 the fundamental approach to these kinds of dose
21 reconstructions where we do have a problem.

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1 In addition to the idea that overtime
2 certainly looks like it's real, but there's
3 something more fundamental.

4 One of the arguments made by NIOSH that
5 I am critical of is the argument that, well, we
6 believe that the conservatism that is inherent in
7 the way in which they did the external doses is
8 sufficient to account for overtime.

9 And I don't agree with that. I think
10 that the idea that somehow you commingle the way
11 in which you decide to assign external exposures
12 is one thing, and as we just discussed we're okay
13 with that.

14 But completely separate item is, okay,
15 what duration are we going to assume. And to sort
16 of compound the two and say, well, there's enough
17 conservatism built in to the way in which we've come
18 up with the radiation distribution, the microR per
19 hour distribution, is sufficient to account for any
20 overtime.

21 I don't think that's a good policy in

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1 my opinion. I think that you keep the two
2 separate. And in this case there is abundant
3 evidence that there was overtime. And it would be
4 appropriate to not go with 2,000 hours per year,
5 but to go with the 2,500 hours per year.

6 And Bob, again, did I correctly
7 communicate that aspect of this part of finding 1?

8 MR. BARTON: Yes, John, I agree. I
9 think it's just one of those cases, especially with
10 the overwhelming evidence from the actual claimant
11 population that overtime was worked. It just
12 seems appropriate to me to increase the number of
13 hours per year. And I think that was our point
14 there.

15 DR. MAURO: And that's true, but there
16 is a more, I would say, overarching issue that I
17 think the Board, that we'd like to alert the Board
18 to.

19 This idea that you could put the two
20 together. Well, we don't have to really worry
21 about overtime because there's enough conservatism

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1 in this part to account for that.

2 And that's really a fundamental
3 approach to dose reconstruction that the Board
4 could be either comfortable with or not comfortable
5 with.

6 I don't know if we've encountered this
7 type of thing before. We may very well have where
8 we'd say, well, we built enough conservatism into
9 this that we're not going to worry about that.

10 But I think -- I myself feel that that's
11 not a good way to come at these problems, but that's
12 certainly a judgment call that the Board needs to
13 make.

14 CHAIR MUNN: Thank you both for calling
15 me back. I was following on your most recent
16 publication and my mind stopped right where the
17 illustration began. So thanks for getting us back
18 to that.

19 My memory is that NIOSH had addressed
20 that somewhat differently in their May responses,
21 but I thought there was discussion about that.

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1 Tom or someone at NIOSH, do you have a
2 response?

3 DR. NETON: Yes, this is Jim. I'll
4 again chime in and ask for Tom's comments if he has
5 anything to offer in addition.

6 First of all, I guess, I didn't recall
7 that it was 90 percent of the CATI in the written
8 report that indicated they worked overtime.

9 We didn't go back and look at those.
10 Maybe we should have.

11 Is there any indication that that was
12 in the residual period, or was that during all
13 periods? I mean, I don't really know.

14 MR. BARTON: Yes, Jim. We
15 specifically looked at the claims that had covered
16 employment during the residual period and claims
17 that had both.

18 (Simultaneous speaking)

19 MR. BARTON: -- operational period we
20 did not consider those.

21 DR. NETON: Did they indicate more

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1 casual overtime, or was it consistent? I mean, to
2 justify 2,500 hours you'd have to go back and do
3 some sort of a quantitative evaluation. I just
4 don't think randomly picking 2,500 hours is
5 necessarily appropriate.

6 The other thing that surprised me
7 actually was that the Blockson Site Profile was
8 thoroughly vetted through the review process and
9 it uses 2,000 hours throughout. So, this is sort
10 of new, a new finding I guess on a document that
11 had been reviewed.

12 I'm not against the 2,500 hours, but I
13 think we have to go back and reevaluate it. I hear
14 what John Mauro is saying about the qualitative
15 evaluation that says, well, don't worry about it
16 because it's in there.

17 I think if we're going to say that then
18 we'd have to follow up with some sort of
19 quantitative evaluation to demonstrate that that
20 indeed is true.

21 So, I guess we're not prepared at this

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1 point to agree or disagree on this issue. I think
2 it's a new area. If it applies to the entire Site
3 Profile maybe we need to talk about that.

4 Because like I say, 2,000 hours is part
5 and parcel of what the whole Site Profile uses right
6 now, not just the residual period. So, it's
7 something that needs to be discussed in addition,
8 I think.

9 And again, we'd have to go back and
10 review the CATIs and such.

11 MR. BARTON: I understand, Jim. I can
12 tell you when we've asked was it a casual overtime
13 thing, I can tell you it pretty much ran the gamut.

14 A lot of times, as you know the CATI
15 reports are structured, did you work overtime and
16 the claimant can just check yes and not write in
17 what that typically was.

18 We did document those reviews and
19 that's something we would be happy to provide to
20 NIOSH.

21 DR. NETON: And again, this is new,

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1 like I say. We reviewed the Site Profile in detail
2 and this was not an issue in the past. It may need
3 to be changed. So we'll take it under
4 consideration and do a little more thorough review
5 of what needs to be done there.

6 And it may be that the whole Site
7 Profile needs to be revised, I don't know. As far
8 as work hours goes.

9 There's something else I was going to
10 mention but I forgot.

11 CHAIR MUNN: This does create an issue
12 that perhaps does need further pursuit.

13 It seems, however, that the position
14 that SC&A has taken most recently that most of the
15 things we're looking at actually are a Site Profile
16 rather than an SEC issue certainly apply to this
17 segment of the finding.

18 It leaves me with a little question of
19 how best to proceed with it. It undoubtedly needs
20 to be quantified a little better and in a little
21 more detail I think certainly for me to come to a

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1 conclusion in my mind which direction to go with
2 this.

3 But it seems with respect to the SEC --
4 well.

5 MR. KATZ: So, Wanda, procedurally you
6 can close this as an SEC. This is an SEC review.
7 You can close it at that, we do it all the time,
8 and basically transfer this to being a TBD finding,
9 a Site Profile finding to be resolved, in progress.
10 You leave it as in progress.

11 CHAIR MUNN: Yes, that's exactly what
12 --

13 MR. KATZ: If that's what the rest of
14 the Work Group wants.

15 CHAIR MUNN: But it seems given the
16 overall tenor of what we're doing here that that
17 appears to be the most appropriate to me.

18 However, any comments from any of the
19 Board Members?

20 MEMBER CLAWSON: This is Brad. I
21 don't have any. I agree though that this is

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1 actually a Site Profile issue. I think that we can
2 deal with the other part of this and just put this
3 under Site Profile.

4 MEMBER ROESSLER: This is Gen. I
5 would think that as we go through the rest of the
6 findings, if may all which they appear to do fall
7 into the TBD issue rather than SEC that then we can
8 follow Ted's advice or his recommendation and close
9 the SEC issue and leave the others as TBD issues.

10 But maybe we should look at all of them
11 first.

12 CHAIR MUNN: Well, I'd like to look at
13 all of them, but also I'd like very much to be able
14 to handle them one at a time.

15 It's my feeling right now that I would
16 suggest that we close the -- as I have suggested
17 earlier, I suggest that we close this finding with
18 the notation that the overtime issue is deemed to
19 be a TBD issue and should be treated in that manner.

20 Any question or any disagreement to
21 that from the Board Members? If not we'll do so

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1 and move onto finding 2.

2 DR. NETON: Wanda, this is Jim. I just
3 want to point out that in effect this will add 15
4 millirem per year. If we agree to 2,500 hours the
5 external dose will go from 60 to 75 millirem per
6 year. So it's not a huge issue.

7 CHAIR MUNN: Well, you don't have to
8 convince me. As you know I have been of the opinion
9 for some time since we first amassed.

10 DR. NETON: I mean, it would require us
11 to go back and rework all the cases and the PER but
12 we're willing to do that if that's the way it works
13 out.

14 CHAIR MUNN: Well, I think that's the
15 kind of process we have adopted in the past. I
16 don't necessarily agree with it, but I do believe
17 that we have spent an inordinate amount of time
18 being concerned with extremely small exposure
19 rates that are, you know, when we start talking
20 about microrad I can't help but heave a sigh.

21 But that's what we've been charged with

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1 and so it seems appropriate that we do it.

2 Thank you and I very much appreciate the
3 information that this adds 15 millirem. That's
4 really, really hard for me to accept as being a
5 reason to do this, but if we're going to dot every
6 I then it looks to me as though this is an I that
7 perhaps needs a dot.

8 Let's move onto finding 2 with the
9 understanding that we're placing another burden on
10 ourselves by making the assertion that this needs
11 to be addressed. We'll go onto finding 2.

12 DR. MAURO: Okay, this is John again.
13 I'm looking at section 3, a draft right now and I
14 just noticed something. Whether this is finding
15 2 or part of finding 1, the way it's described in
16 the write-up is that this particular thing I'm
17 about to mention is part of finding 1. But the
18 title says section 3, second part of finding 2. I
19 think maybe there's a little confusion there that
20 has to be cleaned up. I'm not sure. But I just
21 thought I'd alert you folks in other words for

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1 record-keeping purposes whether or not we've
2 identified this correctly in terms of the
3 numbering.

4 But that being the case what we have
5 here is something that I believe we originally had
6 as a finding and we're going to recommend that we
7 convert it to an observation. And you'll see why
8 very quickly.

9 When I looked at the way in which
10 external exposures were assigned for Blockson in
11 effect what was done was assume that everyone at
12 the site received exposures, and if they were
13 working in building 55 where the exposures were
14 most elevated, or at least that was the premise.

15 And I asked myself when I looked at
16 this, well you know, there's also this big pile of
17 phosphogypsum outside. And maybe that might be
18 important.

19 And the report was basically silent on
20 this matter. Again, we're just talking about what
21 I think is a Site Profile type issue.

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1 And so I went ahead and researched this
2 possibility. Is it possible that the external
3 exposure from phosphogypsum stacks might actually
4 be important.

5 And so the bottom line is that by
6 assigning everyone the exposure as if they worked
7 in building 55 full-time whether that be 2,000
8 hours or 2,500 hours, that certainly is
9 conservative in terms of there may be some other
10 workers that spent a lot of time there at the
11 phosphogypsum stacks as opposed to building 55 and
12 their exposures would be lower, substantially
13 lower. And I point this out in my write-up.

14 The only thing I guess I raise here is
15 I didn't know that until I went to the Florida
16 Institute of Phosphate Research and looked up some
17 numbers and got some exposure rate data.

18 I said holy mackerel, there really is
19 nothing of any substance in terms of external
20 exposure associated with the outdoor stacks. But
21 until I did that I didn't know that.

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1 And I thought it would be worthwhile
2 again if the day comes when you are going to make
3 any revisions to the report it might be a good idea
4 to say that because until I looked at it I didn't
5 know that the dose exposure is extremely low. And
6 there's lots and lots of data from FIPR related to
7 this matter.

8 And I made that an observation. I'm
9 not even sure if it was worthy of an observation.

10 I sort of like the idea that, you know,
11 someone being thoughtful about well, what about
12 that exposure scenario. And you look at it and you
13 say yes, we looked at it and it's really nothing
14 and here's the documentation and you put that to
15 bed. Right now that's not in the ER.

16 CHAIR MUNN: Thank you, John. And
17 thank you for this again, for that very thorough
18 reference that is often overlooked in the amount
19 of data that exists on these exposures.

20 Do we have any further discussion that
21 needs to be done? Does anyone have any objection

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1 to closing this for our purposes? We'll do that
2 and move forward to the next item.

3 DR. MAURO: This is finding 3. And
4 this has to do with beta exposure to the skin. And
5 I think we do have an issue here that we'd like to
6 keep remain in progress. And let me explain.

7 NIOSH did not provide an estimate of the
8 skin dose. The position that we originally
9 pointed out, NIOSH's response now, and please
10 clarify if I say this incorrectly.

11 We believe there's enough conservatism
12 built into the way in which the external
13 penetrating dose, the one we originally described
14 under finding 1, there's enough conservatism in
15 that to account for any skin exposure from beta.

16 And we don't agree with that for two
17 reasons.

18 One is our calculations show that the
19 external exposure would be about 24 millirad per
20 year which is on top of the dose from penetrating
21 radiation. That would be the beta contribution.

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1 But more importantly, I'll go back to
2 this again. Let's say, for example, that we all
3 agree that the penetrating dose from photon
4 exposure is conservative, and it is. The
5 distribution captures this high-end little spot.
6 So you could argue that's pretty conservative.

7 And one could say that well, yes, that's
8 good enough. We don't have to worry about beta.
9 We're going to give that to the skin too.

10 This idea of compounding the two
11 subjects and saying one conservatism is sufficient
12 to account for another exposure, a pathway.

13 Again, this goes to a philosophy of dose
14 reconstruction that I think is something that the
15 Board, I don't know if the Board discussed this in
16 the past. Perhaps so.

17 But it seems to me when you can separate
18 them and you can reconstruct the two it should be
19 done that way as opposed to dismissing a pathway,
20 like in this case dismissing the skin dose from beta
21 and claiming that, well, it's accounted for by the

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1 photon distribution.

2 In this case I believe it doesn't, and
3 not only it doesn't, but the idea of doing that even
4 if it did is really not a good way to come at these
5 problems.

6 And again, this is something of course
7 for deliberation by the Board.

8 So we believe this finding remains in
9 progress.

10 CHAIR MUNN: Does anyone have any
11 concern with the approach that's been suggested?

12 DR. NETON: This is Jim. I think I'd
13 like to comment maybe on John's discussion.

14 CHAIR MUNN: Thank you, Jim. Go for
15 it.

16 DR. NETON: I think you might have
17 misunderstood when we said conservatism was built
18 into it.

19 The fact is that we were -- the surveys
20 that were done were done with end window GM probes
21 that measured both beta and gamma.

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1 So if we assume that it's either all
2 beta or all gamma it's conservative to the skin and
3 to the organs themselves.

4 We pointed out if we had to back out the
5 beta then the organ doses would go down. That's
6 true. But since you can't differentiate between
7 the beta and the gamma exposures with those survey
8 instruments we're assuming in this case that the
9 entire 60 mR per year or whatever it ends up being
10 would be dose to skin in the case of a skin exposure,
11 or 60 mR per year to the organ dose as if it were
12 penetrating.

13 We didn't feel the need to separate out
14 the two components.

15 DR. MAURO: Jim, I hear that, but I have
16 to say the only thing that tripped me up is that
17 everything is in mR per hour.

18 DR. NETON: It's really Roentgen per
19 hour.

20 DR. MAURO: Yes, Roentgen. So when I
21 saw Roentgen I said hm. And you may be correct,

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1 maybe it really should be millirem. But
2 everything is reported in millirem.

3 DR. NETON: Oh no, it's an exposure
4 measurement, but it's a beta/gamma exposure
5 measurement with an HP -- it's a Geiger GM.

6 DR. MAURO: Okay, so when you report
7 0.03 mR per hour you're saying that includes --

8 DR. NETON: Beta.

9 DR. MAURO: You know in the classic
10 definition Roentgen is, you know.

11 DR. NETON: I know, yes.

12 DR. MAURO: So that's what tripped me
13 up. And what you just described is no, no, no, that
14 0.03 is really a combination of both beta and gamma.

15 DR. NETON: It's a mica entrance window
16 on those GM probes. It's clearly measuring beta
17 exposure.

18 DR. MAURO: I did not know that and I
19 hear your explanation. And it does provide an
20 additional layer for consideration. Thank you for
21 clearing that up.

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1 CHAIR MUNN: Does this change your
2 approach at all, John?

3 DR. MAURO: Well, effectively what Jim
4 is saying is that the 24 millirad per year beta
5 exposure that I estimated as being separate from
6 the penetrating dose is in fact accounted for in
7 the survey reading.

8 And if it is, it is. So yes, it does
9 change it.

10 But I've got to tell you, I was
11 surprised. And this is -- when I see mR Roentgen,
12 I mean, I immediately go to penetrating photon
13 dose. I don't even think in terms of rads as any
14 health physicist I think normally would.

15 And I have to admit I did not go look
16 at the instrument, and the window, and whether or
17 not. So, there is a bit of confusion here. And
18 what Jim described is certainly reasonable.

19 But I think that that needs to be
20 explained in the report so other people like me
21 don't make that error.

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1 CHAIR MUNN: And Jim, is that
2 acceptable?

3 DR. NETON: Well, normally we don't
4 revise Evaluation Reports unless there's a change
5 in the fundamental approach.

6 I think -- I'm hoping possibly that the
7 record of discussion here would suffice to explain
8 that.

9 CHAIR MUNN: I would hope so as well.

10 DR. NETON: I'm willing to do whatever,
11 but I think to revise the ER to be -- with
12 explanatory notes is -- it's doable, but it's not
13 been the way we've practiced it.

14 CHAIR MUNN: But then it's been my
15 position from the outset I think that the purpose
16 of our discussions here is to resolve any
17 misunderstandings that might occur, and that our
18 deliberations do become a part of the permanent
19 record of this particular site.

20 MR. KATZ: So, normally in these
21 circumstances we just make a note of this and then

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1 at whatever time the Site Profile gets revised, if
2 it does, then you would slip in these kind of
3 editorial and explanatory additions that aren't
4 changing any of the substance.

5 CHAIR MUNN: This is two sentences.

6 MR. KATZ: Yes. I mean, I'm just
7 saying. That way NIOSH isn't -- it's not incumbent
8 on them to revise it based on this, but at whatever
9 time they might revise it then they can add this
10 little note and there's no real cost to doing that.

11 CHAIR MUNN: Well, and the purpose of
12 our deliberation is just to leave the record of the
13 resolution. So from my position that ought to be
14 adequate.

15 DR. MAURO: There's one other
16 dimension and Jim brought it up in his description.

17 If the 0.03 mR per hour with the GSD of
18 3.2 is in fact a combination of beta and gamma and
19 therefore built into that would be the 24 millirad
20 per year to the skin that I calculated, so you've
21 accommodated.

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1 The only thing I would point out is that
2 that would mean the penetrating dose is being
3 overestimated by perhaps -- in other words I think
4 you're going with 60 and the reality is the dose
5 to the deep organs is probably being overestimated
6 if a significant fraction of that 60 is from beta.

7 And certainly if everyone is
8 comfortable with leaving it that way as a
9 simplified bounding efficiency approach, fine.

10 But I have to tell you I think a shortcut
11 like that is a little disconcerting to me. But you
12 all understand the issue and that's a decision that
13 I don't make.

14 But you could understand in effect now
15 we're overestimating the penetrating dose.

16 CHAIR MUNN: Understand, yes. That's
17 true. And I think that's probably a reasonable
18 argument from my point of view that we leave this
19 discussion as the record and accept the status quo.

20 Is there any objection to that from the
21 Board?

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1 MEMBER CLAWSON: Not really. This is
2 Brad. I just had one question though.

3 In talking about this I guess I look at
4 this from a dose reconstructor's point of view.

5 Is there going to be any say in this
6 process we're going into? Because I know what we
7 get into a lot of times, a lot of the different dose
8 penetration and so forth like that, and beta and
9 alpha. The difference in them when we discuss it.

10 I'm just wanting to make sure that the
11 dose reconstructor that's using that didn't have
12 a confusion.

13 I guess, Jim, this basically comes to
14 you. Do you see any problem? I just want to make
15 sure that it is clarified where it's at and what
16 they're doing with it.

17 DR. NETON: Brad, I think it's pretty
18 clear. The TBD itself actually is in a table. I
19 forget which table number it is, but it tells you
20 to use a dose conversion factor of 1 for skin and
21 apply the entire dose to the skin. It's Table 10.

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1 Oh, that's medical X-rays.

2 Table 8 in the TBD, the Site Profile.
3 It pretty well delineates what you assign to the
4 different organs including the skin based on the
5 exposure rates that we're talking about.

6 MEMBER CLAWSON: Okay, and I
7 understand that. I just, I have not -- I don't do
8 this kind of stuff, but I just know that sometimes
9 the dose reconstructors are sort of in a position
10 where they kind of have to make decisions on that.

11 I just wanted to make sure it was
12 clarified and straightforward for them.

13 MR. TOMES: This is Tom. I just want
14 to clarify. Those doses are in Table 11, the TBD.
15 I just looked it up.

16 MEMBER CLAWSON: Thank you.

17 CHAIR MUNN: Any other discussion?

18 DR. NETON: I'm sorry, Tom. I was
19 looking at the doses for the covered period. Yes,
20 okay, Table 11, correct. Sorry.

21 CHAIR MUNN: Alright.

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1 MR. KATZ: That's closed, right?

2 CHAIR MUNN: We recommend that as
3 closed unless I hear a comment to the contrary. If
4 not let's go onto finding 4. John?

5 DR. MAURO: Okay. Yes, finding 4 is
6 another item where we'd like to convert it to an
7 observation. And again this is a matter of
8 information that's useful to have in the Site
9 Profile, in the ER.

10 It has to do with internal exposures.
11 In the current protocol the internal exposures are
12 from resuspension of uranium in building 55, and
13 that's fine.

14 And again I said to myself, what about
15 any resuspension associated with the inhalation of
16 particulates from the phosphogypsum stacks. I
17 went back to that again similar to the way I did
18 with the photon exposures.

19 And I went ahead and convinced myself
20 that yes, building 55 is by far limiting any
21 internal exposures from resuspension of

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1 particulates now from not radon, we'll talk about
2 that in a minute -- is certainly bounding.

3 And the only point I'd make is it would
4 be useful if the Site Profile or the ER explained
5 that, that yes, we looked at that and we convinced
6 ourselves that there really is -- the limiting
7 pathway is building 55. And that's why I'm saying
8 this really should be an observation.

9 CHAIR MUNN: Well, I certainly agree
10 with you. Resuspension issues from phosphogypsum
11 stacks have not been -- yes, I agree.

12 Does anyone object to the withdrawing
13 of this as a finding and putting this resuspension
14 issue as an observation? If not, we will do so and
15 close it.

16 Observations requiring no additional
17 activity let's move on to finding 5, John.

18 DR. MAURO: Yes. Well, finding 5 is a
19 fun one. And I'm going to hand the baton off to
20 Bob Barton because he is the keeper of the holy
21 grail on this one.

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1 And Bob, it's all yours.

2 MR. BARTON: Sure, John, thanks.
3 Finding 5 really had to do with how you reconstruct
4 the radon inhalation from workers who were on top
5 of that phosphogypsum stack.

6 And this is an interesting one.
7 Basically what probably happened out there is you
8 had all this waste produced from the AWE operations
9 which is essentially the same as what you get from
10 commercial operations.

11 And what likely happened, and starting
12 in July 1960 when AWE operations ended now you're
13 going to start having commercial waste piles on top
14 which is going to necessarily decrease the actual
15 radon component that you're getting from the AWE
16 material.

17 In our original reading of the ER and
18 how it was presented back in November, basically
19 I came to the conclusion that you can't really
20 distinguish what radon is coming from AWE waste
21 versus what's being contributed from the

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1 commercial waste.

2 So, at that time the very conservative
3 notion was, well, if we can't distinguish it we'll
4 just assume the whole pile is AWE and use that radon
5 emanation rate.

6 Now the question becomes how do you
7 implement that kind of assumption for the residual
8 period.

9 And what was done is that it was
10 essentially assumed that the stacks became
11 inactive in 1960.

12 And what happens is a natural crusting
13 mechanism forms that will decrease the radon
14 emanation from a phosphogypsum stack. And the EPA
15 estimates that as about a factor of 4 to 5. So
16 that's how we got essentially to how we're going
17 to do the radon. It's going to decrease assuming
18 that crusting occurred as soon as AWE operations
19 ended at Blockson.

20 Now, originally we said, well listen,
21 if you're going to assume the whole pile is from

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1 AWE activity then the whole pile didn't become
2 inactive until 1991, I believe. So you can't have
3 that source term decreasing until that pile
4 actually became inactive.

5 Now, of course the assumption that all
6 the radon coming out was from AWE material is out
7 of the realm of possibility, frankly. I mean, it's
8 a very, very conservative assumption we felt at the
9 time.

10 We said if you're going to make that
11 assumption then the science has to match and you
12 can't apply that crusting factor.

13 In the recent response NIOSH said,
14 well, that AWE material might have been deposited
15 either by itself somewhere else onsite or was in
16 a part of the main waste stack that became inactive
17 as soon as AWE operations ceased. And that's the
18 currently proposed approach.

19 Now, basically the way we outlined it
20 in our memo is that there are three ways you can
21 do this.

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1 You can either assume the whole stack
2 was from AWE which is essentially the original
3 approach in which case you can't use any sort of
4 attenuation factor for the natural crusting of an
5 inactive pile because it simply wasn't inactive.
6 That is obviously the most claimant-favorable but
7 has the extremely conservative assumption that all
8 that material was from AWE.

9 The most likely thing that happened is
10 that you have commercial material piled on top of
11 the AWE waste which is going to attenuate it. And
12 most likely, I don't think anyone has really done
13 a study, but most likely that would stop the radon
14 emanation from the actual AWE material well before
15 the end of the residual period. So that's most
16 likely what would have happened, but is also the
17 least claimant-favorable.

18 And sort of the middle of the road thing
19 is to say even though it's maybe not likely that
20 the AWE material was in a separate spot at this
21 commercial facility, or that it was in an inactive

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1 portion of the stack, if we can accept that
2 assumption then the science of using that natural
3 crusting effect holds up and is perfectly
4 reasonable.

5 So that's what we tried to outline,
6 really, like I said, three approaches.

7 The first assumption is that all of the
8 material is from AWE. Unreasonable but extremely
9 claimant-favorable.

10 So the middle approach is saying, well,
11 it's not likely, but maybe the stack was out by
12 itself in which case as soon as AWE operations
13 ceased then you have that natural crusting that
14 starts occurring right in 1960 in which case the
15 ER method is perfectly applicable.

16 And the most realistic way, and we
17 certainly don't recommend trying it, is to try to
18 figure out a way to estimate the attenuation from
19 the commercial waste which was likely piled on top
20 of the AWE material.

21 So, the origin of this finding was this

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1 notion that the whole pile was going to be
2 considered AWE material in which case we didn't
3 think the approach taken had a robust scientific
4 basis.

5 But if we can accept the assumption that
6 it was either off by itself or was in an inactive
7 part of the stack then the approach certainly holds
8 up.

9 I don't know if I just confused
10 everybody. I'm certainly happy to answer any
11 questions, or if NIOSH would like to jump in and
12 provide their rationale.

13 DR. MAURO: I could have said one thing
14 that might be helpful. It's John.

15 This is one of those circumstances
16 where the exposures are extremely small. The
17 differences in the three approaches, whatever the
18 increment is small. And the fact that NIOSH would
19 use a simplifying assumption that was
20 claimant-favorable, in my opinion, but maybe not
21 actually realistically represent what really

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1 happened at the site in terms of the management of
2 these piles, we don't know. I mean, there's no
3 information we have regarding how those piles were
4 actually managed.

5 When you balance all of this together,
6 my takeaway is that, you know, this this is, yes,
7 a simplifying assumption that allows you to come
8 up with the claimant-favorable dose which still is
9 extremely small.

10 But at the same time, it's important
11 that the Work Group understand that this approach,
12 the simplifying assumption that this pile is by
13 itself, the AWE pile is by itself, is an assumption.
14 I don't know if we have any evidence that in fact
15 that occurred. In fact, in all likelihood, our
16 sense is that it probably didn't. You wouldn't
17 necessarily manage the site that way, but we don't
18 have any information to that effect.

19 But the simplifying assumption is not
20 unreasonable, and that's our takeaway. But of
21 course, the Work Group has to be comfortable with

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1 that also.

2 CHAIR MUNN: Thank you very much, both
3 of you. Any comment from anyone?

4 MEMBER ROESSLER: This is Gen. I'd
5 like to hear what NIOSH's response is to that.

6 MR. TOMES: This is Tom. I think I can
7 expand on that somewhat.

8 The TBD has a value for radon
9 concentration, basically, in 1960 based on methods
10 that we developed for an active stack, and
11 management at Blockson supports this.

12 We also have a value in the much later
13 years, in 1993, for radon flux. And what we're
14 saying is we can't distinguish the 1961 radon data
15 from AEC work or from commercial work. They had
16 a significant amount of commercial work prior to
17 AEC work, and then for a period of approximately
18 10 years they deposited a significant amount of
19 phosphogypsum.

20 So, in 1960, the radon had a significant
21 portion of AEC-related radon. In 1993, they have

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1 lower radon levels because the stacks were
2 inactive. And we're saying we can't differentiate
3 the 1993 radon levels from either being commercial
4 or AEC. Dose levels in 1993 are relatively low,
5 approximately 0.42 picocuries per liter.

6 But what we're saying is between 1960
7 and 1963 the AEC-related radon would have gradually
8 decreased. And we're not making an assumption of
9 how the waste was deposited, but we're saying it
10 could have been deposited in more than one way.
11 Blockson actually had two phosphogypsum stacks.
12 One of them was the north stack, which was quite
13 small; and then the south stack, which was probably
14 the one -- it was one operation when the facility
15 closed.

16 And we don't really know exactly how the
17 waste was deposited. But regardless how the waste
18 was deposited, I think it's reasonable to conclude
19 that the radon levels that was deposited between
20 1951 or '52 and 1960 would have gradually
21 decreased. It would either have been aged

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1 inactive area or stack, or it would have been
2 covered by a significant amount of commercial
3 waste.

4 And so we don't really make any
5 determination of actually how the waste was placed
6 on the pile, just the fact that the AEC-related
7 radon would have gradually decreased.

8 And that is basically what we came up
9 with. So our depletion curve basically just
10 connects an inactive stack in 1993 to an active
11 stack in 1961.

12 CHAIR MUNN: Thank you.

13 MR. BARTON: If I could respond to
14 that, Tom. I think we all obviously agree that the
15 contribution of radon emanation from the AEC
16 material is going to decrease, either because
17 natural crusting occurred because it was inactive,
18 or because there's going to be material that's
19 being piled on top of it.

20 What we took issue with was the
21 mechanism on how you figure out what that depletion

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1 rate is in the radon emanation from the AEC
2 material.

3 Now, originally, it seemed that the
4 assumption was being made that, well, if we can't
5 differentiate it, we'll assume the whole pile is
6 from AEC material. And that whole pile stayed
7 active till the '90s.

8 So if you make that assumption, you
9 either have to figure out a way to have a depletion
10 curve that takes into account the material piled
11 on top of it, because that's what's attenuating it,
12 or you have to say it was inactive, in which case
13 the crust starts to form.

14 But you can't have it both ways. You
15 can't say that the entire stack is from AEC work
16 and then use a crusting factor on it, because the
17 science just doesn't back that up.

18 MR. TOMES: Well, there are radon data
19 out there from phosphogypsum stacks that are
20 actually measuring phosphogypsum stacks. And the
21 results are recorded for active portions and

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1 inactive portions, and differentiating those areas
2 for radon levels.

3 So when you have an area -- for example,
4 the area of the north stack at Blockson, one report
5 shows it's 210 acres. Another report has it as 175
6 acres. So it's approximately a 200-acre site.

7 So it's not unreasonable to think that
8 we could have had more than one situation going on
9 there. It was not necessarily an area where one
10 continuously piled phosphogypsum in the exact same
11 spot.

12 So I think it's very reasonable to
13 conclude that we had a gradual reduction, for
14 whatever reason, because either the waste was not
15 being buried, it was in an inactive area of the
16 stack.

17 MR. BARTON: Right, and I'm not sure
18 that that was articulated in the original ER. Our
19 understanding was that you were just going to
20 assume the entire stack was from AEC operations,
21 which was where the clash comes with using a natural

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1 crusting reduction factor as opposed to some sort
2 of reduction with material being piled on top of
3 it. So that's where the original issue came from.

4 Now, we're kind of positing now, and in
5 NIOSH's response, that, well, it might have been
6 either by itself, maybe from the north stack, or
7 it's in an inactive part of the stack, in which case
8 you can use the crusting factor. But that was not
9 how it was originally proposed, at least from our
10 view.

11 MR. TOMES: Well, I have to agree, it
12 wasn't explained very well. But I think what we
13 were trying to avoid was to have a gross
14 overestimate by saying it remained at an
15 operational level for all those decades and then
16 had a sudden step decrease.

17 So, admittedly, we do not have an exact
18 way of calculating the radon each year, but we do
19 have supporting data of radon in the few years
20 throughout the residual period that indicates that
21 it's a favorable method. So I think that it's

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1 favorable, it is a reasonable number.

2 DR. MAURO: I think I got the picture
3 and I have to say I understand it. It's a new way
4 of packaging the story. But it's a good way.

5 What you're saying is, look, in 1960,
6 when the AWE operations ceased, the radon emanation
7 rate coming off the stack is going to start to
8 decline. It's going to decline either because of
9 the crusting because the stack was by itself, or
10 it's going to decline because gradually more and
11 more commercial material is being deposited.
12 Either way it's going to decline.

13 And in the latter, of course, the rate
14 of decline is difficult to predict because it's a
15 very complex problem. But nevertheless, you're
16 saying this is going to decline.

17 Let's go with a factor of 5, starting
18 in 1960. It's an expedient way to deal with this
19 issue that is very small anyway. And the data that
20 we do have doesn't in any way invalidate that
21 approach.

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1 So I hear what you're saying. And, you
2 know, if I were in your position I would say, yeah,
3 that's a reasonable compromise on how to deal with
4 this circumstance, especially considering we're
5 talking about extremely small levels of radon.

6 CHAIR MUNN: Thank you all for the
7 information. I will have to agree that this is the
8 type of extremely interesting issue that makes the
9 heart sing in any truly -- it's a wonderful academic
10 exercise to look at this, but on a very practical
11 level this position that has been taken is both
12 highly defensible scientifically, but in any case
13 the end result, even if it were over-exaggerated,
14 is still extremely small in terms of impact on
15 effect of the exposed individual.

16 So, it's been interesting to consider
17 this. Thank you for the full discussion of it.

18 This appears, to me, to be well advised
19 to close on the basis of thorough examination.
20 Does anyone have any opposing view? Any comments?

21 Hearing none, we will consider this one

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1 closed. And I see that completes our work with
2 respect to the current outstanding SEC petition for
3 the residual period. Am I correct?

4 If so, I would recommend that we report
5 to the full Board at the next meeting, that we have
6 met, that we have discussed the issues in-depth,
7 and in our opinion the position taken by NIOSH is
8 accurate and we support it.

9 Is there any objection to that course
10 of action?

11 If not, that's what we will do. I will
12 make the report brief and succinct, but we'll make
13 it that at our next meeting.

14 Is that acceptable for the agenda, Ted?

15 MR. KATZ: Yeah, I think I already had
16 the space provisionally on the agenda for Blockson.
17 So, yeah, I think that will fit fine.

18 CHAIR MUNN: Alright. Very good.

19 MEMBER ROESSLER: Am I off mute?

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

21 MEMBER ROESSLER: Okay. Wanda, when

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1 you put this together could you pass it by the Work
2 Group Members before the Board meeting?

3 CHAIR MUNN: I will be glad to do so.

4 MEMBER ROESSLER: Okay, thank you.

5 MR. KATZ: So we need a presentation
6 from the Work Group. And if we can get that, Wanda,
7 and by all means you're welcome to call on help from
8 John or SC&A in preparing some slides for you.

9 But we should have that, and since we
10 have a lot of time it would be nice to get that a
11 couple of weeks before so that you can circulate
12 it to the rest of the Work Group Members and then
13 be ready for us to get this out to the rest of the
14 Board before the Board meeting.

15 CHAIR MUNN: I'll try to get that done
16 before the end of July so that everyone will have
17 it in time.

18 MR. KATZ: Yeah, that would be great.

19 CHAIR MUNN: Alright.

20 MR. KATZ: So, do you want John or SC&A
21 to draft a presentation for you, or are you wanting

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1 to do that PowerPoint yourself?

2 CHAIR MUNN: Well, let me make a first
3 cut at it and talk with both John and make sure that
4 Jim gets a chance to see it as well.

5 MR. KATZ: Okay.

6 CHAIR MUNN: And I'll pass it by our
7 Board Members so if there's any comment we can
8 adjust it one way or the other.

9 But it's my intent to not make a major
10 presentation out of this, just highlights. We
11 have covered the material thoroughly and NIOSH has
12 certainly done a more than adequate job in
13 presenting the facts to us at our previous
14 meetings.

15 MR. KATZ: Right. So, Wanda, just to
16 be clear, though, I think you are going to need to
17 run through -- it can be at a very summary level,
18 much more summary than the discussion today, but
19 you need to run through those findings so that we
20 have a record on the full Board meeting of the
21 issues being presented and discussed.

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1 CHAIR MUNN: That's my expectation.

2 MR. KATZ: Okay, thanks.

3 CHAIR MUNN: You'll have an
4 opportunity to slap my hands.

5 (Laughter.)

6 MEMBER MELIUS: This is Jim. This is
7 addressing the SEC issues, but I thought we had at
8 least one, the overtime issue that's more of a Site
9 Profile issue.

10 CHAIR MUNN: Yes.

11 MEMBER MELIUS: Are we going to address
12 that?

13 CHAIR MUNN: The overtime issue being
14 a Site Profile issue will be mentioned in the
15 presentation, Jim.

16 MEMBER MELIUS: I don't worry about
17 that as much as what is the plan for moving forward
18 on that?

19 DR. NETON: This is Jim. I think NIOSH
20 has got the responsibility to put on paper a more
21 definitive response to that issue. And we'll

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1 circulate that to the Work Group and SC&A.

2 MR. BARTON: And Jim, this is Bob. I
3 can send you all the spreadsheet we put together
4 when we did that survey of the claimants at
5 Blockson.

6 DR. NETON: That would be helpful.
7 Great, thank you.

8 MR. BARTON: No problem.

9 CHAIR MUNN: Yeah, that would be
10 helpful.

11 MEMBER MELIUS: And then the second
12 issue, which I just think is more of a Site Profile
13 issue, but there's a little confusion in the way
14 this is dealt with.

15 SC&A addressed sort of surrogate data
16 issues for dealing with the stacks and so forth.
17 And that's the basis, or at least -- I'm not sure
18 it's the basis, but it's where their Finding Number
19 5 came in.

20 And I just think it's critical probably
21 at the Site Profile response level that we make sure

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1 we capture what the rationale is for dealing with
2 that.

3 Because I'm trying to think --
4 acknowledge it wasn't clear in the NIOSH
5 documentation. And I don't think it's still clear
6 in the SC&A documentation in the sense that's
7 critical of NIOSH.

8 So I just think we need to get that on
9 the record at some point, either in written form
10 or some other form.

11 CHAIR MUNN: I guess I'm not clear on
12 exactly what your reference to surrogate data --

13 MEMBER MELIUS: Well, we have a section
14 of the SC&A report on using the surrogate data
15 criteria. And they refer to the use of data from
16 Texas Chemical.

17 CHAIR MUNN: Okay.

18 DR. MAURO: Yeah, we didn't actually
19 talk about that today.

20 CHAIR MUNN: No, we didn't.

21 DR. MAURO: But we did go through that

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1 as part of our report, quite extensively. And it
2 came out favorable. That's the bottom line.

3 MEMBER MELIUS: Yes, but in the middle
4 of that discussion you have the Finding Number 5.

5 DR. MAURO: Yes, that's correct.

6 MEMBER MELIUS: Which makes it appear
7 as if you're criticizing the surrogate data. And
8 you're the one doing the application. NIOSH is
9 not. I mean of the criteria.

10 CHAIR MUNN: Okay, we may have to have
11 some discussion offline, because I'm not clear
12 exactly how complete that information needs to be.

13 And I'll need to get a better feel from
14 you, Jim Melius, and I'll need to review the large
15 SC&A report, too, to get a better feel for exactly
16 what that issue is and how we need to present it.

17 MEMBER MELIUS: I think we can sort of
18 simplify that if we just make sure that NIOSH
19 addresses it and comes back with -- in terms of
20 dealing with Site Profile issues, when they come
21 back with the overtime, just is there a clear

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1 explanation of what the approach is going to be?

2 CHAIR MUNN: Okay.

3 MR. BARTON: Dr. Melius, if I might
4 just maybe try to clarify this real quick.

5 We didn't really question the use of
6 Texas City data as a surrogate. It really came
7 down to the technical implementation and what
8 reduction factor you're going to use and what
9 mechanism are you going to assume is actually
10 reducing the radon during the residual period.

11 So we really didn't take issue with the
12 measurements that were utilized from Texas City.
13 It was really just how they -- the science aspect
14 of how they were implemented. If that clarifies
15 a little bit.

16 MEMBER MELIUS: Correct. And I just
17 think we need to capture an explanation of what the
18 method is going to be.

19 DR. MAURO: Yeah, I think, Dr. Melius,
20 you're correct. A lot went into our evaluation of
21 the surrogate data and the degree to which it could

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1 be applied. And why it's applied, the rationale
2 had a lot to do with when to use flux and when to
3 use concentration measurements.

4 There's a nice story in there that we
5 didn't go into because, when we come out of that
6 tunnel, we come out, okay, it seems to work.

7 But you're right. Now that we have a
8 different conceptualization of how we deal with
9 this radon emanation and this rate of decline, my
10 sense is that the surrogate data analysis still
11 holds up. But you're right, it's something we
12 probably should look at within the context of the
13 new conceptualization of this rate of decline
14 business and make sure there's nothing in there
15 that changes our perspective on surrogate data.

16 MEMBER MELIUS: Yeah, that's what I was
17 trying to get at.

18 DR. MAURO: Yeah, I got you now. I
19 caught up to you.

20 CHAIR MUNN: Alright. Let me -- I will
21 ask for some help from John Mauro and from NIOSH

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1 to help put together that slide. But I will
2 incorporate that as a part of our two Site Profile
3 issues that we will pass along in our presentation.
4 Will that do it for you?

5 MEMBER MELIUS: Good.

6 CHAIR MUNN: Okay.

7 MR. TOMES: Wanda, this is Tom. I just
8 want to point out one thing in case everyone didn't
9 see that.

10 Our ER, in Section 7.1.1.2, does
11 discuss surrogate data issues. I didn't know if
12 that was clear or not.

13 MEMBER MELIUS: It's just that we've
14 changed it now.

15 CHAIR MUNN: Alright. We'll see what
16 we can do and put it together. It will be a couple
17 of weeks before you folks hear from me on this
18 point, but I will get back to you soon and we'll
19 try to have this ready for everyone's review well
20 in advance of our upcoming meeting in Idaho Falls.

21 Any other item for the good of the

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1 order?

2 If not, I thank you again, all of you,
3 for joining us this morning and for adding to our
4 deliberations. Thanks. It's much appreciated.
5 Hope you have a wonderful Fourth of July, and we
6 will be in touch in July. Thanks again.

7 (Whereupon, the above-entitled matter
8 went off the record at 12:26 p.m.)

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