

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

+ + + + +

ADVISORY BOARD ON RADIATION  
WORKER HEALTH

+ + + + +

KANSAS CITY PLANT WORK GROUP

+ + + + +

THURSDAY  
MARCH 2, 2017

+ + + + +

The Work Group convened via teleconference at 10:00 a.m. Eastern Time, Josie Beach, Chair, presiding.

PRESENT:

JOSIE BEACH, Chair  
BRADLEY P. CLAWSON, Member  
JAMES E. LOCKEY, Member  
JOHN W. POSTON, Member  
LORETTA R. VALERIO, Member

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

## ALSO PRESENT:

TED KATZ, Designated Federal Official  
RON BUCHANAN, SC&A  
PETE DARNELL, DCAS  
JACKSON ELLIS, ORAU Team  
JOE FITZGERALD, SC&A  
JENNY LIN, HHS  
PAT MCCLOSKEY, ORAU Team  
JIM NETON, DCAS  
MUTTY SHARFI, ORAU Team

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

## Contents

Welcome and Roll Call.....	4
DCAS Presentation of Updated KCP Site Profile.....	6
SC&A Review of Site Profile.....	10
Additional Items.....	69
Path Forward for Issue Resolution or.....	72
Presentation to Board.....	72
Adjourn.....	75

### **NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

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

2 10:05 a.m.

3 **Welcome and Roll Call**

4 MR. KATZ: Welcome, everybody. This  
5 is the Advisory Board on Radiation Worker Health.  
6 It is the Kansas City Plant Work Group, and today's  
7 agenda, which is posted on the NIOSH website under  
8 scheduled meetings for today's date, is pretty  
9 simple. We're addressing an updated, a newly  
10 updated Site Profile for the Kansas City Plant.  
11 That's the sort of guidelines for doing dose  
12 reconstructions.

13 And SC&A has reviewed that Site Profile  
14 and has the review in. And both the Site Profile  
15 and SC&A's review are posted on the NIOSH website,  
16 at least the review current from SC&A is on the  
17 NIOSH web site. That's what we'll be discussing  
18 today.

19 And let's get started with roll call.  
20 For roll call we're talking about a site, so please  
21 speak to conflict of interest. I can cover the  
22 Board Members because I know who's on here. No  
23 Board Members have conflicts for Kansas City, but

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 let me just run through what we have.

2 (Roll call.)

3 MR. KATZ: Okay then. Let me just  
4 remind everyone to please mute your phones except  
5 for when you're addressing the group. That will  
6 help everybody with audio quality. And don't put  
7 the call on hold at any point, but hang up and dial  
8 back in if you must.

9 And with that, Josie, it's your agenda.

10 CHAIR BEACH: Okay. Thank you. And  
11 good morning, everyone.

12 I just want to do just a quick overview  
13 of the background documents, just a reminder. Our  
14 first Site Profile review was done in 2013. We did  
15 have some issues from that Site Profile. We have  
16 two matrices that have been pulled together, one  
17 from 8/20/15 and the last one from 3/14/16. Then,  
18 of course, we have the new TBD that was issued the  
19 first of the year. We have NIOSH's memo that  
20 pulled together from both of those matrices and  
21 some other items that were discussed during Work  
22 Group meetings for the SEC. And then we have  
23 SC&A's memo looking at NIOSH's review.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1           So I believe, Pete, you're going to  
2 start with your memo and go through your TBD items,  
3 and then we'll move onto SC&A. Is that correct?

4           MR. DARNELL: We can certainly do it  
5 that way, if that's what you'd like.

6           CHAIR BEACH: Okay. Yes, that's what  
7 the agenda says, so that sounds good to me.

8           **DCAS Presentation of Updated KCP Site Profile**

9           MR. DARNELL: Okay. So I took up the  
10 memo that we wrote in March of 2016 stating what  
11 we put into the TBD.

12           And Jackson, if you wouldn't mind going  
13 over the full changes to the TBD when I'm done, I'd  
14 appreciate it.

15           So back in March of last year, we pulled  
16 together the requirements from the previous TBD  
17 Issues Matrix and the ER Reports Issues Matrix and  
18 came up with the path forward for updating the final  
19 TBD after the ER failed to qualify. Basically, we  
20 have a number of points that we were going to add  
21 to the TBD dealing with natural uranium operations  
22 from 550 to 255 using the Battelle-6000  
23 methodology.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           And the post-operations period, we  
2           bounded by using samples at 49 picocuries per cubic  
3           meter. Tritium water operations, we had most of  
4           them, since we bounded from 1/1/59 to 12/31/75. We  
5           also addressed magnesium thorium operations, and  
6           I think we'll probably be discussing that a little  
7           bit later, too.

8           We did reach out. Pat McCloskey  
9           reached out to the Kansas City Site in preparation  
10          for this meeting, and they had found nothing new  
11          to add to the dates for mag-thorium operations.

12          We also updated the TBD to include  
13          post-operational periods from 1978 to '84 and using  
14          a bounding maximum surface contamination rate for  
15          D&D operations and OTIB-70. We also added in  
16          information for organically-bound tritium ops like  
17          the hi-lo switch plates and the dividing 1.77  
18          millirem year per dose for all workers. The D&D  
19          we bounded using the Rockwell dosimetry data from  
20          6 of '84 through 9 of '86.

21          That's really, with the exception of  
22          some information about rad waste handling and rad  
23          area maintenance, housekeeping, and so on, all the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 information that was added to the TBD.

2 Jackson, if you could go over more  
3 specifically how the TBD changed from the previous  
4 version?

5 MR. ELLIS: Sure. This is Jackson  
6 Ellis with the ORAU team, the TBD author. I made  
7 the changes.

8 We added basically intakes for those  
9 new operations and post-operation periods that you  
10 just mentioned. The majority of that was internal  
11 intake additions to the TBD. We also added a  
12 coworker study to the TBD to assign an external  
13 coworker dose. The X-ray section was updated to  
14 new projects on guidance and standards.

15 And that's pretty much a summary of what  
16 the additions to the TBD were. There were some  
17 other changes very specifically on comments from  
18 SC&A and then through the comment resolution cycle,  
19 internal and external.

20 MR. DARNELL: I guess that's about it  
21 then.

22 CHAIR BEACH: Okay. Pete, is that all  
23 you're going to cover?

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1                   MR. DARNELL:  Yes, that's pretty much  
2                   what was in the agenda.  I'm looking at this, and  
3                   in seeing that word, they're bringing the changes  
4                   to the TBD with what SC&A put out in their  
5                   memorandum, so I'm --

6                   CHAIR BEACH:  Yes, yes.

7                   MR. DARNELL:  -- really at a loss of how  
8                   in-depth you want to go.

9                   CHAIR BEACH:  Well, yes, I think you're  
10                  fine.  I think it was great how you did a really  
11                  good job pulling everything from both of those two  
12                  initial matrices and then all of the new stuff that  
13                  was added.

14                  Is there -- are there any questions for  
15                  NIOSH before SC&A kind of goes through?

16                  (No audible response.)

17                  CHAIR BEACH:  Hearing no questions,  
18                  Joe, if you want to -- well, this is the first time  
19                  we've actually met on the TBD issue, so I think we  
20                  just need to kind of go through them and make sure  
21                  there's no questions.  I understand there's  
22                  agreement between SC&A and NIOSH, but I think we  
23                  should go ahead and close them out as a Work Group,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 unless somebody has other ideas.

2 MEMBER LOCKEY: No, I think that's  
3 good, Josie.

4 CHAIR BEACH: Okay. Then Joe, I guess  
5 we'll hear from SC&A now.

6 **SC&A Review of Site Profile**

7 MR. FITZGERALD: Yes, and I'd like to  
8 echo what you just said, that this was a pretty good  
9 integrated listing of both the Site Profile issues  
10 that we had in the earlier matrix, as well as what  
11 came out of the ER review.

12 And in terms -- and this is in a broader  
13 sense, and we'll get down to specifics and a sort  
14 of an itemized -- go through the itemized list, but  
15 we had a number of new exposure sources and  
16 operations that, given the level of research that  
17 we did on the ER, were clearly ones that needed to  
18 be added to the Site Profile. And I think NIOSH  
19 did a pretty good job of listing all those from the  
20 tritium to the -- some of the uranium operations  
21 and making sure that those were added to the scope  
22 of the Site Profile.

23 In general, we also as part of the ER

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 process, but even earlier in the Site Profile  
2 process, had a number of maybe typical Site  
3 Profile-level technical comments, where for  
4 clarification purposes the basis for some of the  
5 technical values and perhaps some clarifications  
6 that need to be provided we identified. In some  
7 cases, they were sort of parked because we were busy  
8 on ER. And I think the listing that is provided  
9 is a pretty complete list of what was left in terms  
10 of resolution and in terms of those kinds of  
11 comments.

12 But I just want to say again that those  
13 are kind of the typical comments that are raised  
14 as we go that everyone recognizes, or  
15 clarifications and a need for perhaps better  
16 explanations. And that certainly was provided.

17 More fundamentally, perhaps, the  
18 coworker model and the validation and verification  
19 of D&D that was done and is acknowledged in here  
20 was an important aspect of review, where I think  
21 NIOSH was able to reassure itself and the Work Group  
22 that in terms of the records transfer from the  
23 original records to the electronic database, that

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 was in fact a very valid transfer, and there wasn't  
2 any clear or any obvious deficiencies or gaps. So  
3 that was another, I think a major step that I think  
4 the Work Group and NIOSH had agreed on originally.

5 So in general, I think those were all  
6 covered in terms of the scope of what Pete and his  
7 folks had in this memo, so it provides a pretty  
8 complete listing.

9 Now I'm going to go through, as Josie  
10 wanted to do, in terms of the Work Group, each of  
11 these items so you'll have the opportunity to ask  
12 questions and perhaps make a recommendation for  
13 closure. So I'm just going to go down.

14 The memo that we provided on January  
15 27th pretty much follows the listing first of the  
16 ER-based list and then to the original Site Profile  
17 Matrix list. So if you want to follow, that pretty  
18 much tracks with what Pete had issued in his memo.

19 The first item, the natural uranium  
20 operations from May 1st -- and this is the '50s.  
21 I think there, it was a case of making sure that  
22 there was language in the Site Profile that tracked  
23 with the agreements that were reached during the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 ER discussions that the TBD-6000 would be used as  
2 the bounding methodology for doses during that time  
3 period.

4 Now again, the Site Profile predated  
5 most of this research and discussion, so that  
6 clearly was something that could be added, and it  
7 was. So we were satisfied that the language that  
8 was provided in the Site Profile, using TBD-6000  
9 Table 7.8 for the inhalation intakes and Table 7.9  
10 for the ingestion intakes, we felt covered the  
11 ground that was agreed to during the ER discussion.  
12 So we feel it's been addressed.

13 So I don't know, Josie, do you want to  
14 take this item by item?

15 CHAIR BEACH: Yes, I guess just  
16 briefly, if anybody has any questions or comments,  
17 or if they have anything to discuss when they were  
18 reviewing this. I didn't have any questions, and  
19 I was comfortable with this first one.

20 Anybody else have any questions or  
21 comments?

22 MEMBER VALERIO: Josie, this is  
23 Loretta. I was fine when I read through it.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 CHAIR BEACH: Perfect. Okay.

2 MEMBER CLAWSON: This is Brad. I'm  
3 fine with this one.

4 CHAIR BEACH: All right.

5 MEMBER LOCKEY: The same. Jim Lockey.

6 CHAIR BEACH: Okay. Great. And,  
7 Joe, I guess just continue to move through and  
8 we'll --

9 MR. FITZGERALD: Yes, I --

10 CHAIR BEACH: And I don't think we need  
11 to close these item by item, do we, Ted?

12 MR. KATZ: I think actually it would be  
13 better to do that, yes.

14 CHAIR BEACH: Okay. So the first one,  
15 everybody's in agreement that they agree with NIOSH  
16 and SC&A, and we need to go ahead and close this  
17 one?

18 MR. KATZ: Yes, so you could just say  
19 if anyone's in disagreement, speak up; otherwise,  
20 it's closed.

21 CHAIR BEACH: Okay. That sounds  
22 perfect. Thanks, Ted.

23 MR. KATZ: Thanks.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 CHAIR BEACH: So the first one is  
2 closed.

3 MR. FITZGERALD: Yes, I might add that  
4 we did go into probably a lot of detail during the  
5 ER discussions, so --

6 CHAIR BEACH: Right, definitely.

7 MR. FITZGERALD: -- we don't perhaps  
8 need to revisit so much of that, but just to  
9 acknowledge that a lot of the ER-derived issues  
10 were pretty fully vetted in that discussion. And  
11 so we find ourselves pretty much at the endpoint  
12 for most of these, if not all of them.

13 CHAIR BEACH: Right, yes.

14 MR. FITZGERALD: The next one is the  
15 post-operational period. This is after the  
16 operation was closed down from March of '55 to  
17 August of '59, which was bounded using the maximum  
18 gross-alpha air sample, which was estimated from  
19 the source term information that was available for  
20 those operations.

21 And I provide the quote from the TBD  
22 itself in terms of applying that 49 picocuries per  
23 cubic meter value for the maximum gross-alpha

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 measured air sample as the bounding value that  
2 would be used for those post-operational periods  
3 in terms of exposure pathway dose estimations.

4 And that pretty much covers it. I  
5 mean, that's the bounding value for -- it's not so  
6 much the residual period, but it's the  
7 post-operational period for those -- the original  
8 natural uranium operations.

9 So we didn't have any issue with that.  
10 And I think that was pretty much acknowledged  
11 during our ER discussions, so we're certainly  
12 satisfied.

13 CHAIR BEACH: I found the same thing in  
14 reviewing the transcript from our last meeting.

15 MR. FITZGERALD: Yes.

16 CHAIR BEACH: I have no questions or  
17 comments, and I agree with that.

18 Anybody else have any disagreements  
19 with closing that item?

20 MEMBER CLAWSON: This is Brad. I  
21 don't. I'm good with it.

22 MEMBER VALERIO: This is Loretta. I'm  
23 good with it.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. LOCKEY: This is Jim. Me, too.

2 CHAIR BEACH: Okay. Sounds great.

3 Thank you.

4 MR. FITZGERALD: Okay. Moving along,  
5 tritium water operation. You know, one thing  
6 during the ER reviews that turned out to be a  
7 revelation, this was during the research that we  
8 all did onsite, was the presence of several  
9 different tritium activities, tritium source  
10 activities, one of which was Kansas City during an  
11 earlier period, '59 to '75, was bottling small  
12 bottles of tritium for use in actual  
13 instrumentation monitors as far as calibration.

14 And the issue there on this particular  
15 item was to come up with a bounding dose for that  
16 operation, which we -- was actually somewhat  
17 involved. And I remember the modeling and the  
18 estimations that NIOSH had performed to come up  
19 with a value that would be both reasonably accurate  
20 and bounding of whatever dose someone might  
21 receive -- operator may have received from handling  
22 these -- handling tritium and bottling it.

23 And the fixed -- as the Work Group might

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 recall, it was a very -- relatively small dose  
2 involved: 6.66 millirem per year. But this would  
3 be applied to all workers, because again, you could  
4 not certainly just determine who was in that  
5 particular area when the bottling was occurring.  
6 So NIOSH conservatively is applying it to all  
7 workers.

8 In any case, we felt that pretty much  
9 satisfied the discussions that we had during the  
10 ER -- or SEC period, and that was pretty much where  
11 everybody had come out in terms of agreement in the  
12 Work Group as I recall. So we're satisfied with  
13 that one.

14 CHAIR BEACH: Yes, and I agree with  
15 that, Joe. Our discussions --

16 MR. FITZGERALD: They were pretty  
17 lengthy on that one.

18 CHAIR BEACH: Yes.

19 MR. FITZGERALD: I think we spent --

20 CHAIR BEACH: They were.

21 MR. FITZGERALD: -- quite a bit of time  
22 talking on that one.

23 CHAIR BEACH: And NIOSH's addition to

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 that 6.66 for all workers was exactly what we had  
2 asked for, so I'm comfortable with that.

3 Other Work Group Members, any comments  
4 or questions or agreement?

5 MEMBER CLAWSON: This is Brad.  
6 Bringing back a lot of fond memories and a lot of  
7 talks that we had to do. I agree with this.

8 MEMBER VALERIO: This is Loretta. I  
9 agree.

10 MEMBER LOCKEY: And I agree, too.

11 CHAIR BEACH: Okay. We agree to close  
12 the tritium operations. And then the other part  
13 of that was the nickel. And we agreed that we were  
14 not going to add any dose.

15 I don't know if you have anything more  
16 to say about that, Joe.

17 MR. FITZGERALD: No, no.

18 CHAIR BEACH: Yes.

19 MR. FITZGERALD: It was pretty clear  
20 that wasn't significant.

21 CHAIR BEACH: Okay. Thank you very  
22 much. So moving on to the magnesium.

23 MR. FITZGERALD: Yes, and this should

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 bring a lot of fond memories for everyone on this  
2 one. It turned out to be a very intense research  
3 task.

4 This involves the magnesium operations  
5 that we could actually verify from '61 to '63 and  
6 from '70 to '77. And '63 to '70, I think the Work  
7 Group, after some effort, and certainly with  
8 NIOSH's additional research, decided there was  
9 still some ambiguity. We had certainly some  
10 documentation that NIOSH identified that certainly  
11 was strongly indicative of no operations during  
12 that time period, but we also had some worker  
13 interviews that kind of fuzzed it up in the sense  
14 that there were some claims of activity.

15 So I think, again, the Work Group felt  
16 that there wasn't anything that strongly  
17 corroborated activity during that period, and  
18 certainly the inventory information, both  
19 classified and otherwise, sort of suggests there  
20 wasn't inventory at the Site.

21 So I think the way it was left was that  
22 NIOSH would be attentive to any additional new  
23 information that might have become available that

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 would clarify, perhaps confirm that in the future,  
2 but certainly the Work Group was persuaded, I  
3 think, that there wasn't anything that strongly  
4 suggested that there was an operational --  
5 operations during that time. So that's kind of how  
6 it was left on that.

7 But for the other time periods, there  
8 was, as I recall, one follow-up set of measurements  
9 that were taken, I think it was 1969 or '70, that  
10 provided a basis for assigning an airborne limit  
11 of  $3E^{-11}$  that was the administrative airborne  
12 limit that was applied for magnesium thorium. I  
13 think it was the '70 time frame. And based on that,  
14 that was the bounding exposure value that was  
15 applied for exposures during the time period where  
16 you actually had active operations.

17 And for the ingestion rate, OTIB-09,  
18 which is I think a pretty standard application, was  
19 used as well to support dose reconstruction.

20 And I went ahead and, for the Work Group, put the  
21 specific quote from the Site Profile right there  
22 in our memo. And we felt that was pretty detailed  
23 and covered the ground pretty thoroughly as far as

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1       how it applied.

2                   And there was a question, how would you  
3       apply this to different sets of workers that might  
4       be in the area, not only the operators themselves,  
5       but maybe laborers in the area and supervisors?  
6       And I think that was also laid out pretty  
7       specifically in the Site Profile.

8                   So I think we're pretty satisfied.   And  
9       I think the Work Group was pretty heavily engaged  
10      in this whole discussion on mag-thorium, so this  
11      should not be unfamiliar, and certainly the  
12      resolution should be pretty clear.   And it was laid  
13      out I think fairly well in the Site Profile.

14                   MEMBER CLAWSON:   Hey, Joe, this is  
15      Brad.   I just want to make sure that I'm reading  
16      this correctly.

17                   MR. FITZGERALD:   Yes.

18                   MEMBER CLAWSON:   So we -- and I've been  
19      involved in mag-thorium chase, so we're looking at  
20      the operations from '61 to '63 and then the '70 to  
21      '77, is that correct?

22                   MR. FITZGERALD:   Those are the periods  
23      where we have clear operational records.   For the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 '63 to '70, there is documentation including a  
2 memorandum that suggests or indicates that there  
3 were no mag-thorium operations being supported at  
4 the plant.

5 But again, and we did a lot of worker  
6 interviews, as you remember, and there were some  
7 indications that some workers felt there were some  
8 things going on there but not clearly mag-thorium.  
9 There was -- as you recall, information was pretty  
10 compartmentalized and not -- workers themselves  
11 weren't as familiar with what was being done in  
12 certain locations in the plant. So I think that's  
13 why it was left the way it was, that there's  
14 certainly no confirmation of --

15 MEMBER CLAWSON: Right.

16 MR. FITZGERALD: -- that information,  
17 but we certainly want to leave that open a little  
18 bit.

19 MEMBER CLAWSON: Okay. And we looked  
20 at that, because I remember because we'd hold up  
21 the documents and the stockpile that we had there,  
22 and we could clearly see the gap.

23 But during those time periods this 3 to

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 the -- the  $3E^{-11}$ , that is going to be given to  
2 everybody, or how would we do this? How are we  
3 going to do this? Because I know we're using  
4 OTIB-009.

5 MR. FITZGERALD: Well, the  
6 implementation is included. And I was saying that  
7 the -- they're assuming a 10 percent exposure rate  
8 for supervisors that were in the mag-thorium areas.  
9 And again, the machining areas for mag-thorium are  
10 pretty well defined. If you remember the  
11 discussion we had about whether workers could  
12 easily move from one part of the operational area  
13 to a different part of the plant, it's one huge  
14 building, but the movement of workers was a pretty  
15 lengthy discussion that we had. And we did a lot  
16 of interviews just to establish to what extent  
17 there was such movement and whether people had  
18 unfettered access to areas where mag-thorium was  
19 being machined.

20 And I think, ultimately, I think  
21 everyone was satisfied that the operators would  
22 have been exposed more directly. There might have  
23 been some workers in the general area exposed but

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 to a lesser extent. And that's one reason there's  
2 more language as far as how you would apply that  
3 as far as supervisors and laborers in the general  
4 location. So laborers would get half of the  
5 operators' exposure. Supervisors would get 10  
6 percent.

7 MEMBER CLAWSON: Okay.

8 CHAIR BEACH: Yes, that paragraph lays  
9 it out pretty well for the -- it's like three  
10 different classes. The administrative, it  
11 actually goes into clerical, like supervisors. So  
12 anyway, I was satisfied with the way that was laid  
13 out --

14 MR. FITZGERALD: Yes, and as I recall  
15 the discussion, that's maybe a standard  
16 application of -- or apportionment of exposure  
17 that's been used in the past as well. So when the  
18 Work Group was concerned about workers in the area,  
19 I think this is what sort of came out of that.  
20 There was an acknowledgment that, for  
21 implementation's sake, this could be done. So  
22 that's why it's laid out the way it is.

23 MEMBER CLAWSON: Okay. I was just

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 reading through that, and I just -- because I kept  
2 remembering the problems we were having with  
3 Department 20 and Model Shop and --

4 MR. FITZGERALD: Yes.

5 MEMBER CLAWSON: -- the different  
6 numbers that we had and everything else like that.  
7 But basically, it's coming down to machining  
8 operators, laborers, and supervisors,  
9 and --

10 MR. FITZGERALD: Yes, even the  
11 clerical staff that might have been peripherally  
12 exposed are mentioned as well.

13 MEMBER CLAWSON: Okay. But it's for  
14 those time periods that we discussed up there at  
15 the top.

16 MR. FITZGERALD: Right.

17 MEMBER CLAWSON: And we're keeping  
18 open the other areas. And if we come across other  
19 projects, then we can redo things.

20 MR. FITZGERALD: Yes, I want to  
21 emphasize that the reason there's even any  
22 ambiguity is, on some of the interviews, there was  
23 some suggestion that something was going on, but

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 we could never pin it down or get -- other than  
2 inventory documentation, as you were alluding to,  
3 which certainly indicates that, as far as what was  
4 there, it didn't appear to be there from '63 to '70.  
5 So that's certainly why it sort of tilted in that  
6 direction.

7 MEMBER CLAWSON: Right. I have some  
8 fond memories of those discussions.

9 (Laughter.)

10 MEMBER CLAWSON: Yes, but okay, I just  
11 wanted to make sure I was reading it correctly  
12 there. And I am, so I appreciate that.

13 CHAIR BEACH: Okay. Any other  
14 comments or questions on this item, the  
15 mag-thorium? Any disagreements with closing at  
16 this time?

17 MEMBER VALERIO: Josie, I have a  
18 question before we close it.

19 CHAIR BEACH: Okay.

20 MEMBER VALERIO: And I need to go back  
21 and finish reading the survey, reading the White  
22 Paper, the Legal Limit White Paper, on the  
23 magnesium-thorium operations, but were there any

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1       decontamination efforts between the '63 and the '70  
2       period time frame?

3                   MR. FITZGERALD:   They did do -- and  
4       this, we got into some of this in terms of the actual  
5       machines themselves, whether they were cleaned or  
6       decontaminated, and I'm trying to remember exactly  
7       what we found as far as actual documentation.  I  
8       don't think there was actual documentation -- we  
9       had documentation for the uranium machining  
10      period, but I don't believe we had actual -- and  
11      this is another reason there's a little bit of  
12      ambiguity, whether there was actual cleaning up of  
13      the equipment for the mag-thorium itself.  And  
14      there's also some question about whether other  
15      operations occupied the same space immediately  
16      after, in terms of uranium operations.

17                   So to answer your question, no, I don't  
18      think we have any specific -- and maybe Peter can  
19      jump in -- but I don't think we have any specific  
20      documentation of cleanup of the mag-thorium  
21      equipment in 1963.

22                   CHAIR BEACH:   Yes.  No, I was trying to  
23      think --

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1                   MR. FITZGERALD: I mean, that would  
2 certainly corroborate, and we probably wouldn't  
3 even have the ambiguity if that were the case.

4                   CHAIR BEACH: Yes, you're right. I  
5 read that machines were cleaned, but now going  
6 back, it was actually the uranium.

7                   MR. FITZGERALD: It was the uranium  
8 that was cleaned.

9                   CHAIR BEACH: Yes. I know we spent  
10 many hours discussing this.

11                   Pete, do you have anything else to  
12 answer Loretta's questions?

13                   MR. DARNELL: No, I don't remember  
14 anything off the top of my head. I'm trying to look  
15 back through some of the documents now.

16                   Pat, do you remember anything off the  
17 top of your head as far as cleanup on those?

18                   MR. ELLIS: Yes, if you remember -- so  
19 the earlier operations were largely performed in  
20 Department 20 and the later operations in Model  
21 Shop. And so what we did is, we repurposed  
22 Department 20 for a new project that was coming in,  
23 and I remember reading that machines were cleaned,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 and there was a large decon effort of Department  
2 20 to move to that new operation. I don't have that  
3 SRDB number in front of me now, but I can look it  
4 up.

5 CHAIR BEACH: Yes, I kind of remember  
6 that as well.

7 MR. FITZGERALD: That was for  
8 mag-thorium or for uranium? Because Area 20 was  
9 cleaned a couple times, and I remember that -- I  
10 seem to remember the cleanup of equipment in areas  
11 being specific to the uranium operations, less so  
12 for mag-thorium. Because I think that was the --  
13 one of the contributing reasons why the '63 to '70  
14 wasn't as, quote, clean as it might have been.  
15 Some ingredients were missing from that  
16 assessment.

17 MR. ELLIS: Well, I'm remembering a  
18 document that talks about the number of people in  
19 Department 20 trickling down. As those operations  
20 came to a close, it was like 20 people, then 10  
21 people. And at the end, there was like three or  
22 four people in there.

23 MR. FITZGERALD: Right.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1                   MR. ELLIS:   And that's the document I'm  
2                   thinking about, and I'll go look for it,  
3                   but --

4                   MR. FITZGERALD:  Yes, I remember --

5                   MR. ELLIS:   -- repurposed and stuff was  
6                   cleaned and moved out of there.

7                   MR. FITZGERALD:  Yes, repurposing I  
8                   remember.  The downsizing of staff I remember.  
9                   What I don't remember is the mag-thorium machining  
10                  equipment, what have you, being cleaned.

11                  CHAIR BEACH:  So this is Josie.  On  
12                  page 12 of the TBD, Section 2.2, it talks about  
13                  process descriptions, and I highlighted this when  
14                  I was reviewing.  It does talk about the work  
15                  including operations with the uranium,  
16                  magnesium-thorium.  And it says, in addition,  
17                  cleanup activities and D&D activities have  
18                  potential exposure.

19                  So it kind of alludes to both those  
20                  processes and D&D of them, but it doesn't really  
21                  give the specifics in that section.  That's the  
22                  only one I can find for -- that even mentions  
23                  mag-thorium in the cleanup sense.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. FITZGERALD: So maybe we can, for  
2 Loretta, provide some clarity on the cleanup  
3 question. It sounds like that would be helpful.

4 CHAIR BEACH: Yes, I think so. I  
5 suspect we could do that with email.

6 MR. ELLIS: I'll look for it and  
7 provide it to Pete, and he can let you guys know.

8 CHAIR BEACH: Awesome. Thank you.

9 MEMBER VALERIO: Thank you.

10 CHAIR BEACH: Okay. And that would  
11 just have an implication for the time period  
12 between '63 and '70, or what do you --

13 MR. FITZGERALD: Well, I think we  
14 looked at the question of what the exposure would  
15 be to workers who were, if you remember, cleaning  
16 equipment and D&Ding. And what is in the TBD and  
17 what we discussed was specific, I believe, and  
18 maybe -- it's been awhile -- specific to DU and  
19 uranium. But depending on what can be found, maybe  
20 we can be a little more specific on the mag-thorium.

21 CHAIR BEACH: Okay. And that is that  
22 time period between '63 and '70 because we're not  
23 assigning any dose during that period.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. FITZGERALD: That's right.

2 CHAIR BEACH: So the original two time  
3 periods, I think those are covered, unless I'm  
4 missing something.

5 MR. FITZGERALD: Well, if there's any  
6 dose for cleanup, it may actually be at the tail  
7 end of the 331, sort of the end of the first  
8 mag-thorium period.

9 CHAIR BEACH: Right.

10 MR. FITZGERALD: And they would have  
11 cleaned up and sort of shut things down, so it  
12 wouldn't necessarily affect the intervening  
13 period.

14 CHAIR BEACH: Okay.

15 MEMBER CLAWSON: Well, and I just  
16 wanted to throw out one thing. If I remember  
17 correctly, when we were talking about the  
18 mag-thorium part of this and the Model Shop with  
19 it, they kind of geared up for other jobs, like you  
20 were saying, and some of those machines were  
21 cleaned up and taken out and moved in, and a  
22 different type of machine was brought in for the  
23 next pending project. And that's why we kind of

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 left that period open.

2 As you said earlier, Joe, we couldn't  
3 find any operations or anything else for it, but  
4 that's why we kind of ended it. If I remember  
5 right --

6 MR. FITZGERALD: Yes. Yes, that --

7 MEMBER CLAWSON: -- it was at that  
8 point.

9 MR. FITZGERALD: Yes.

10 MEMBER CLAWSON: I just remember the  
11 re-tooling and stuff like that, because we all  
12 understand the uniqueness of the Model Shop. And  
13 we call it a Model Shop with what they did and  
14 everything in there, so --

15 MR. FITZGERALD: Yes, what Pat was  
16 saying is quite true. They repurposed the areas,  
17 and there were other operations going on  
18 afterwards.

19 MEMBER CLAWSON: Well, and if I  
20 remember, that's why we didn't kind of give a  
21 residual-type thing there because of how they redid  
22 that. But that's going off my memory, and I've  
23 slept a couple times since then.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1                   But anyway, Loretta, that's what I  
2                   wanted you to kind of know a little bit, where --  
3                   when it comes out.

4                   CHAIR BEACH:   Okay.   So this -- I don't  
5                   think that keeps us from closing out this item.  
6                   We're still parking that time period between '63  
7                   and '70, or am I incorrect in that assumption?

8                   MEMBER CLAWSON:   This is Brad.   I'd  
9                   agree with you, Josie.

10                  CHAIR BEACH:   Okay.

11                  MEMBER VALERIO: And I agree with you,  
12                  Josie, as well.

13                  CHAIR BEACH:   Okay.   Jim?

14                  MEMBER LOCKEY:   I also agree.

15                  CHAIR BEACH:   Okay.   So when I make up  
16                  my slides, which I've already started on, I'll make  
17                  sure that we have that answered as well.   So we  
18                  agree that we can close this, and we're parking that  
19                  D&D question still with the other time period.  
20                  Okay.   Thank you, everyone.

21                  Moving    onto    the    post-operations  
22                  period.

23                  MR. FITZGERALD:   Yes, from '78 to '84.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 And this is where the depleted uranium was being  
2 handled and the same kind of grinding operations  
3 were taking place. And what was done was a maximum  
4 surface contamination value was identified as a  
5 sort of bounding level of contamination during the  
6 operations as well as during D&D. And based on  
7 that estimation, a dose estimation was done, and  
8 that's being applied for the air concentration  
9 during that period.

10 So that's '78 to '84, using the maximum  
11 surface contamination that was estimated from the  
12 operations. And I think we actually did have  
13 measured values from that time period, so this is  
14 not one where it was modeled. We actually had some  
15 values, and surface contamination level was used.

16 CHAIR BEACH: Okay. Thank you, Joe.

17 MR. FITZGERALD: And we didn't really  
18 have any issue with that. I think that was kind  
19 of straightforward.

20 CHAIR BEACH: Right. Any questions,  
21 anyone?

22 I know we discussed using OTIB-70 quite  
23 extensively also.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 Any questions/comments?

2 (No audible response.)

3 CHAIR BEACH: Everybody agree with  
4 closing this item?

5 (Simultaneous speaking.)

6 MEMBER CLAWSON: I agree with it,  
7 Josie.

8 CHAIR BEACH: Okay. I believe that  
9 was an agreement.

10 MEMBER LOCKEY: Yes, it was.

11 MEMBER VALERIO: I agree, Josie.

12 CHAIR BEACH: Okay.

13 MEMBER CLAWSON: It was.

14 CHAIR BEACH: Okay. So that's closed  
15 as well. And moving onto the next item,  
16 organically bound tritium operations.

17 MR. FITZGERALD: Yes, this was another  
18 thing that sort of came out of the research during  
19 the SEC review, which, if you all remember the hi-lo  
20 switch plates, and there was a nice White Paper that  
21 I think NIOSH generated on that. It was activity  
22 that took place from '63 to '68. And that was a  
23 whole -- and again, the White Paper is the best

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 source of the modeling process and the calculations  
2 that were made, but I thought it was a pretty  
3 well-done paper, and I think the Work Group did at  
4 the time as well. And the value, 1.77  
5 millirem, again because of not being able to  
6 distinguish who was in the area, would be applied  
7 to all workers. And I think that value, actually  
8 -- and, Pete, correct me -- got a little more  
9 conservative. There was an initial  
10 estimate from a first version of the White Paper  
11 where it was somewhat lower, but then the second  
12 version I think was 1.77. That benefitted from,  
13 I think, additional information, better data that  
14 was collected. And that ended up being the  
15 bounding value that was identified. And  
16 certainly, it's a relatively low dose, as you would  
17 expect, with the level of tritium that was being  
18 handled on these hi-lo switch plates.

19 CHAIR BEACH: Well, and Joe, on page 41  
20 of the -- I believe I read it was 1.73, which is  
21 not much different than the 1.77 that's listed.

22 MR. FITZGERALD: Yes.

23 CHAIR BEACH: So just that's just a

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 little bit of an inconsistency there. So I believe  
2 it's the 1.73, if I'm reading that correctly.

3 MR. FITZGERALD: Oh, okay. I'm  
4 looking at what we got from the White Paper.

5 CHAIR BEACH: Yes, what you had was --

6 MR. FITZGERALD: I got 1.77 from the  
7 White Paper.

8 CHAIR BEACH: Yes, and in the actual  
9 TBD, it's 1.73.

10 MR. FITZGERALD: Okay. Yes.

11 CHAIR BEACH: Very small difference,  
12 but --

13 MR. FITZGERALD: Yes, okay.

14 CHAIR BEACH: -- just a note.

15 MR. FITZGERALD: Maybe a  
16 recalculation. Okay.

17 CHAIR BEACH: So any comments on that?

18 (No audible response.)

19 CHAIR BEACH: No, hearing none, I think  
20 we can agree to close that as well.

21 MEMBER CLAWSON: I agree.

22 MEMBER VALERIO: I agree.

23 MEMBER LOCKEY: I agree.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 CHAIR BEACH: Okay. Thank you.

2 Now D&D.

3 MR. FITZGERALD: Yes, on the next one,  
4 there was a D&D done in the main area, and  
5 basically, they brought Rockwell and outsourced  
6 that to Rockwell. And they essentially dug up part  
7 of the concrete and cleaned up an area where there  
8 had been -- operationally, there was a routine  
9 spill.

10 And the actual Rockwell report  
11 indicated there was no personnel exposure, and they  
12 controlled it pretty thoroughly. And the -- in the  
13 report itself, there's a provision for a -- what  
14 would have been the airborne levels, and I think,  
15 again, the air sample control level that -- and this  
16 is a very low level of  $1 \times 10^{-12}$  microcuries per  
17 milliliter, and assuming a breathing rate and the  
18 time period of a full year. And that pretty much  
19 provides the bounding dose for anyone that would  
20 have been involved in the D&D or exposed to the  
21 D&D. And again, we don't have any issue with that.  
22 It's a relatively low dose.

23 CHAIR BEACH: I guess I wasn't clear

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1       who would get this dose or who would determine who  
2       would get this dose?

3                   MR. FITZGERALD:   Well, you wouldn't be  
4       able to determine.

5                   CHAIR BEACH:    Right.

6                   MR. FITZGERALD:    I think it -- am I  
7       right, Pete, it would be applied to everyone in the  
8       area, because essentially you wouldn't be able to  
9       know who might have got a residual -- maybe breathe  
10      in residually.

11                   Because this was -- this D&D was in the  
12      middle of the operating area practically, and even  
13      though there was a lot of controls on it, you --  
14      there would have been some minor perhaps airborne  
15      level.  And this is calculated on what that -- it  
16      would be if you assumed the 1.135 picocuries per  
17      day ingestion rate.

18                   CHAIR BEACH:    Okay.  And that would be  
19      assigned to everyone during that time period, the  
20      '84 to '86.

21                   MR. FITZGERALD:    '83 to -- let's see,  
22      '84 to '86.

23                   CHAIR BEACH:    Okay.  Any questions or

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1        comments on this item?

2                    MEMBER CLAWSON:    This is Brad, Josie.

3        No.

4                    MEMBER VALERIO:        This is Loretta,

5        Josie.    No.

6                    MEMBER LOCKEY:    Jim, Josie.    No.

7                    CHAIR BEACH:    Okay.    Then we agree to

8        close this item.    Thank you.

9                    And the next one.

10                    MR. FITZGERALD:    Yes, the next one

11        was -- we've gotten into this issue, if you recall,

12        what did workers do in terms of -- it could be an

13        operator operating a machine, but they had

14        separate -- a separate category of worker who

15        actually collected shavings, for example, and

16        disposed of those shavings in barrels.

17                    And so the question was how do you

18        evaluate their exposure?    How would you assign a

19        dose to the maintenance/housekeeping staff, the

20        people that actually handled the uranium shavings,

21        for example, or what not?    And I think after some

22        discussion the Work Group had agree with NIOSH's

23        suggestion to assign the un-monitored workers a

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS

1323 RHODE ISLAND AVE., N.W.

WASHINGTON, D.C. 20005-3701

(202) 234-4433

[www.nealrgross.com](http://www.nealrgross.com)

1 value. And there's a basic value. The ones that  
2 were doing this work, assign them that value and  
3 use an exposure category 2; i.e., workers with  
4 occasional exposure. And I think that was the  
5 recommendation in the TBD.

6 Pete, can you -- or maybe, Pat,  
7 category -- exposure category 2, workers with  
8 occasional exposure, is that an apportionment  
9 value?

10 MR. McCLOSKEY: Yes, Joe, that comes  
11 from -- let's see, I think that was another one of  
12 those TBD-6000 breakdowns on --

13 MR. FITZGERALD: It's sort of -- I  
14 mean, it assumes that the worker for the occasional  
15 exposure be getting a portion of the value that  
16 would be assigned to general workers that were  
17 working with the uranium.

18 MR. McCLOSKEY: Why don't I just go to  
19 514 just so I don't misstate that? It would be  
20 easier just to be sure.

21 MR. FITZGERALD: Because the -- during  
22 the discussion we certainly agreed they weren't  
23 like the operators where they were in the middle

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 of perhaps a small cloud of particulates, but  
2 nonetheless by handling the shavings and what have  
3 you they would certainly get some exposure.

4 CHAIR BEACH: Yes, it's on page 32 of  
5 78, if anyone's following along in the TBD.

6 MR. FITZGERALD: Yes, I just got there.

7 CHAIR BEACH: Category 2 was GM.

8 MR. McCLOSKEY: Okay. So this is not  
9 like the TBD-6000 four classes of workers, but we  
10 instead fit them more into the DU coworker model.  
11 And we gave them the GM value.

12 CHAIR BEACH: And that's the 891  
13 picocuries. Well, is that correct? Yes, that's  
14 the Category 2 worker also.

15 MR. McCLOSKEY: And this is, like Brad  
16 was talking about earlier, also why we got  
17 ourselves comfortable with the D&D of the  
18 magnesium-thorium area or of the machinery from  
19 Department 20 being clean. We said we've got this  
20 document that showed that they cleaned these  
21 machines out. And then we started to talk about  
22 the exposures of those folks that were cleaning the  
23 machines out and we got to this. And we came up

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 with a method for bounding the doses of the machine  
2 cleaners and then we felt like that was enough to  
3 say that we sufficient D&D of the area at the end  
4 of mag-thor operations.

5 MR. FITZGERALD: Okay. Well, anyway,  
6 again the basis for a value that's less than the  
7 actual operator value is the fact that they did  
8 handle but weren't actually doing the machine  
9 directly. So the discussion during the Work Group  
10 sessions were how do you -- what could be assigned  
11 to these workers so that they get accredited with  
12 getting exposure but not at the operators' level,  
13 and certainly not at the general employee who might  
14 be not even in the area? Because they were  
15 directly handling the material that was coming off,  
16 the waste chips and what have you and they were  
17 putting them in barrels.

18 CHAIR BEACH: Yes, we had many  
19 discussions on how to cover these workers, and --

20 MR. FITZGERALD: Yes.

21 CHAIR BEACH: -- I thought NIOSH was  
22 very responsive in adding this section that lays  
23 it out I think --

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. FITZGERALD: Yes.

2 CHAIR BEACH: -- very well.

3 MR. FITZGERALD: Because it was sort of  
4 a gap and they -- in the ER Review it was I think  
5 more -- it was better clarified that you had these  
6 classes of workers, the ones that cleaned the  
7 machines, that ones that collected the chips. I  
8 think before that it was just sort of you had  
9 operators and you had the general employee. You  
10 didn't have this sort of middle Class of workers.  
11 And I think this is a better way to identify those  
12 kinds of workers.

13 CHAIR BEACH: Okay. I do agree with  
14 that. Any reason not to close this item? Any  
15 comments or questions?

16 MEMBER CLAWSON: Josie, this is Brad.  
17 I'm good with it.

18 CHAIR BEACH: Okay. Thanks.

19 MEMBER VALERIO: Josie, this is  
20 Loretta. I'm good with it.

21 MEMBER LOCKEY: And Jim's good with it,  
22 too.

23 CHAIR BEACH: Okay. Thank you. So

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 that closes out all the new items that were added  
2 and we get into -- I think, Joe, you already alluded  
3 to the verification of the dosimetry, but the next  
4 sections bring in the SEC issues that we moved over  
5 and --

6 MR. FITZGERALD: Yes, I would say there  
7 was three major areas --

8 CHAIR BEACH: Yes.

9 MR. FITZGERALD: -- and the second  
10 would be the D&D. And that --

11 CHAIR BEACH: Yes.

12 MR. FITZGERALD: -- we've already  
13 touched on that. And I think the Work Group  
14 actually had a number of discussions and agreed  
15 with in the end the -- that the D&D and the coworker  
16 was accomplished. So I don't think that's really  
17 part of this per se. It's already been addressed,  
18 but --

19 CHAIR BEACH: No.

20 MR. FITZGERALD: -- it is reflected --

21 CHAIR BEACH: Right.

22 MR. FITZGERALD: -- in the revised TBD.

23 The other issues; and this comes more

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 from the March 14th matrix which sort of is derived  
2 from the earlier matrix. We had sort of a listing  
3 of Site Profile issues that were the original Site  
4 Profile issues. And to some extent those were  
5 brought forward as -- during the course of the ER  
6 discussions, but weren't really settled because  
7 they were Site Profile issues. So this was an  
8 opportunity to sort of disposition those.

9 In any case, I'm just going to through  
10 these. Certainly item 2 from the original SEC  
11 matrix -- and the Work Group certainly determined  
12 some aspects of that were certainly Site Profile  
13 in nature. And I think the clarity that the Work  
14 Group was looking for was sort of better  
15 identifications of categories of workers for DU  
16 intakes; we just talked about that just now as a  
17 matter of fact, and values for the different  
18 categories of workers and time periods that were  
19 more specific to those kinds of workers and for  
20 those time periods.

21 And that I think benefitted from the  
22 research where you could identify the different  
23 operations better, the potential for exposure from

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 those operations. And perhaps the grading of  
2 those exposures depending on whether they were  
3 operators or handlers or just general workers in  
4 the area, that kind of thing.

5 And I think the discussion that's in the  
6 TBD now benefitted from all that and I think we're  
7 satisfied. That original concern -- I think the  
8 biggest concern probably, and Brad will remember  
9 this, just the movement of workers. To what extent  
10 workers could move from the clean areas of the plant  
11 into these contaminated areas, to what extent they  
12 would be exposed and whether these areas were  
13 sufficiently restricted, all that. And I think  
14 certainly we spent a lot of time researching that,  
15 interviewing workers. And I think what's in the  
16 TBD now is a much clearer picture of how that took  
17 place at Kansas City.

18 CHAIR BEACH: Yes, I agree that tables  
19 5.6 and 5.7 are really clear on different job titles  
20 and what dose they'd receive.

21 So anyone have any questions on that SEC  
22 2 worker location, job locations? It covers quite  
23 a bit.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1                   MEMBER CLAWSON: This is Brad, Josie.  
2 I'm good with it. We --

3                   MR. FITZGERALD: Yes, we spent a lot of  
4 time.

5                   CHAIR BEACH: We did. A great deal of  
6 time.

7                   MEMBER CLAWSON: Yes, we did.

8                   CHAIR BEACH: Okay. So Brad agrees to  
9 close. Loretta?

10                  MR. LOCKEY: I agree. I agree also.

11                  CHAIR BEACH: Okay.

12                  MEMBER VALERIO: I agree. I agree.

13                  CHAIR BEACH: Okay. So we agree that  
14 this is covered adequately and we are going to close  
15 that first item.

16                               Moving onto chronic versus acute.

17                  MR. FITZGERALD: Yes, I mean, I think  
18 this was an original issue from our review that went  
19 back probably ten years ago --

20                  CHAIR BEACH: Yes.

21                  MR. FITZGERALD: -- that the chronic  
22 basis for the coworker model didn't seem to jive  
23 with the -- some of the bioassay records which

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 showed excretion rates there might have been some  
2 more episodic exposures. And this predated  
3 TBD-6000 and all of that deliberation. And I think  
4 this issue has sort of caught up with -- or TBD-6000  
5 sort of caught up with this issue and provides a  
6 pretty thorough discussion of chronic versus acute  
7 and how to apply that and acknowledge that the  
8 chronic model can be effectively used in situations  
9 like this, even if you do have episodic exposures.

10 So again, I think this is a case where  
11 an original Site Profile issue raised issues which  
12 at some point the Board and NIOSH have shed more  
13 light on the subject. And I think in this case  
14 TBD-6000 provides that reference point. So we're  
15 satisfied and I think this is addressed pretty well  
16 in the Site Profile.

17 CHAIR BEACH: Yes, and I believe there  
18 was a technical call on this issue as well early  
19 on to get some clarity on how that --

20 MR. FITZGERALD: Yes.

21 CHAIR BEACH: -- was going to be done,  
22 so --

23 MR. FITZGERALD: Yes, and I think it

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 was agreed that TBD-6000 was probably the short  
2 answer to providing that perspective.

3 CHAIR BEACH: Right. Any comments or  
4 questions?

5 (No audible response.)

6 CHAIR BEACH: I think it gives a more  
7 accurate description of how to apply dose to  
8 different workers. I think the early pattern  
9 didn't work. So I'm comfortable with closing  
10 this.

11 Brad?

12 MEMBER CLAWSON: I'm good with it. We  
13 spent a lot of time on this and I know the rest of  
14 the Work Group knows it, too. We were -- we looked  
15 at this and I -- so I'm satisfied with what NIOSH  
16 has presented.

17 CHAIR BEACH: Okay. Loretta and Jim?

18 MEMBER POSTON: Hey --

19 (Simultaneous speaking.)

20 MEMBER POSTON: Hello?

21 CHAIR BEACH: Hi, John.

22 MEMBER POSTON: I just got out of  
23 class, sorry I am late.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 CHAIR BEACH: Okay. Well, glad you're  
2 here. We are on -- we're going through SC&A's memo  
3 and we are on SEC3, chronic versus acute. We're  
4 just getting that closed out.

5 And, Jim, did I hear from you? Are you  
6 comfortable with that?

7 MEMBER LOCKEY: Yes, I am.

8 CHAIR BEACH: Okay. So we'll move  
9 onto SEC10, the non-penetrating dose.

10 MR. FITZGERALD: Yes, and this again  
11 was one of the original Site Profile findings.  
12 I -- Ron Buchanan, are you on the line?

13 DR. BUCHANAN: Yes, I am.

14 MR. FITZGERALD: Yes, this was  
15 something that Ron focused on, and it was actually  
16 a technical call on this specific subject between  
17 Ron and NIOSH.

18 So, Ron, if you want to just outline the  
19 original issue and how it was dispositioned?

20 DR. BUCHANAN: Yes, this is Ron  
21 Buchanan, SC&A.

22 The records for the Kansas City Plant  
23 were used to do some different units. And

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 sometimes we used -- they used rads and rems, but --  
2 and they also used several different columns in  
3 their records. And some of these columns didn't  
4 add up, so it didn't make sense.

5 What we clarified with NIOSH is what was  
6 actually being used in dose reconstruction? And  
7 we had them clarify that, and then they clarified  
8 it further in their revised TBD on what columns were  
9 used for what dose assignments. And we agreed that  
10 that was correct and had no further issue with it.

11 CHAIR BEACH: Ron, can you -- this is  
12 Josie. Can you -- what is AMAD? I know it's an  
13 abbreviation. What is it an --

14 DR. BUCHANAN: What was that again?

15 MR. FITZGERALD: Oh, you're on the next  
16 issue.

17 CHAIR BEACH: Am I on the next --  
18 oh --

19 (Simultaneous speaking.)

20 MR. FITZGERALD: Yes, we're still  
21 on --

22 CHAIR BEACH: Okay. Sorry, sorry,  
23 sorry. Okay. Yes, I'm jumping ahead here.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 DR. BUCHANAN: Yes.

2 MEMBER CLAWSON: That's what happens  
3 when we jump ahead. We get AMAD.

4 (Laughter.)

5 CHAIR BEACH: Okay. Well, I ask you  
6 that at the next one. So on non-penetrating doses.  
7 And you're right, there was a technical call on that  
8 as well.

9 So any comments or questions on this  
10 one?

11 MEMBER CLAWSON: This is Brad. I'm  
12 good with it. I appreciate the level that they  
13 went to with this, because this is kind of an  
14 interesting one at the very beginning of it. And  
15 we've got it I think sorted out, so I'm good with  
16 it.

17 MEMBER LOCKEY: Jim. I'm good with  
18 it, too.

19 MEMBER VALERIO: This is Loretta. I'm  
20 good with it.

21 CHAIR BEACH: Okay. John?

22 MEMBER POSTON: Yes, I'm good with it.  
23 I'm okay.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 CHAIR BEACH: Okay. Great. So we  
2 agree that -- to close that issue as well.

3 Now we can get onto -- these are the ones  
4 that came from the original 2013 matrix.

5 MR. FITZGERALD: Right.

6 CHAIR BEACH: There's what, three or --  
7 no, there's quite a few of them. So --

8 MR. FITZGERALD: Right, and we --

9 CHAIR BEACH: Okay.

10 MR. FITZGERALD: -- obviously tracked  
11 the ones that NIOSH -- that had been addressed  
12 before now. So there's a long list of them, but  
13 these are the ones that bare resolution and  
14 consideration by the Work Group.

15 CHAIR BEACH: Okay.

16 MR. FITZGERALD: Yes, these are the  
17 originals. The first -- the SEC-labeled ones are  
18 one from the SEC matrix.

19 CHAIR BEACH: Correct. Okay. So  
20 we're ready to move on then, I think.

21 MR. FITZGERALD: Yes, AMAD.

22 CHAIR BEACH: AMAD. Thank you.

23 MR. FITZGERALD: Yes, on this

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 particular issue -- and this was the -- I guess the  
2 standard default value of five microns for the  
3 particle size. The original site -- and again,  
4 this is going back probably ten years ago, but the  
5 original finding that was in the -- our review back  
6 then was that the default value is recommended and  
7 provided for in the Site Profile, but there was very  
8 little information about the particle size and  
9 chemical form and what not of the uranium oxide  
10 powder that was being handled. And there's some  
11 question as to whether that was conservative enough  
12 or not.

13 And I think the response was in the ICRP  
14 modeling, if there's no site-specific information,  
15 the default value would be the five microns, but  
16 again I think it sort of begged the question, well,  
17 is there any way we can get site-specific  
18 information? So it was a question at the time.  
19 There was no site-specific information that was  
20 available for the Site Profile at that time.

21 And during the research phase of the ER  
22 NIOSH clearly obtained quite a bit of information.  
23 We were able to find information that characterized

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 the uranium oxide to a large degree. And a lot of  
2 that information is now in the TBD. And I went  
3 ahead and used the entire quote because I think it's  
4 very good. It provides a lot of detail about what  
5 is known about the uranium oxide and provides some  
6 guidance on how to apply the assumed diameter of  
7 the material.

8 So, and I think again I'm not going to  
9 read all the way through this; you can read it  
10 yourself, but I think that's probably one of the  
11 best descriptions I've seen on that particular  
12 subject.

13 CHAIR BEACH: Yes, I think when I read  
14 through this the only question I had is in the last  
15 paragraph it says, "In fitting bioassay data the  
16 dose reconstructor may wish to start with the one."  
17 I guess I was wondering if Pete could give us a  
18 little bit of clarity on is this going to be a  
19 professional judgment or is there going to -- is  
20 there something more specific than what -- where  
21 they would -- the dose reconstructor would start.

22 MR. DARNELL: As far as I understand  
23 when we're doing the dose reconstructions they're

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 using a tool that pretty much calculates out what  
2 the dose is going to be.

3 CHAIR BEACH: Did you say code?

4 MR. DARNELL: Yes --

5 CHAIR BEACH: I'm sorry. Okay.  
6 Code.

7 (Simultaneous speaking.)

8 CHAIR BEACH: Okay. Thank you.

9 MR. DARNELL: That calculates out what  
10 the dose is going to be in the most  
11 claimant-favorable way. So this adds some  
12 flexibility to look for more claimant-favorable  
13 dose or more specific dose. It has to be a best  
14 estimate.

15 You want to correct me if that's the  
16 wrong, Jackson?

17 MR. ELLIS: What we're doing in pilots  
18 of the dose reconstructions on that is if we have  
19 evidence of one diameter or the other, then we will  
20 assess using that if the -- there's a default that  
21 we use the five micrometer. And then talking to  
22 them, trying to go through the dose  
23 reconstruction template.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1                   MR. FITZGERALD: Well, I guess the way  
2 I read it was you acknowledge that the unaltered  
3 uranium oxide certainly would be of a smaller,  
4 lesser diameter and you provide all the specs on  
5 that material because that came directly from the  
6 specification control that KCP used. But  
7 certainly in terms of the actual handling and the  
8 actual operations the default of five would be  
9 reasonable.

10                   So you're making a distinction between  
11 unaltered, just received powder versus the  
12 actual -- when they actually used the powder to make  
13 forms, to make -- to grind those forms. And once  
14 the forms were completed and they were actually  
15 being handled as forms, the five would be fine.  
16 It's the unaltered I think, the acknowledgment of  
17 having to use a -- well, one micron, it's -- in the  
18 specs it's 1.175 microns. So that to me is the  
19 biggest difference for me.

20                   MR. ELLIS: Well, we have -- if we have  
21 bioassay data to assess, then we can compare the  
22 1.175 with the five micrometers.

23                   MR. FITZGERALD: Yes.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1                   MR. ELLIS:    With the coworker doses  
2                   then we are assessing the five micron diameter.  
3                   The coworker study was performed with that  
4                   diameter.

5                   MR. FITZGERALD:  Yes, and I think our  
6                   original suggestion was you had some need to look  
7                   at types M and S in terms of solubility and whether  
8                   you're using one or five microns and use the dose --  
9                   the assumptions that would give you the highest  
10                  dose, the bounding dose.  And I think pretty much  
11                  that's what you have.  I mean, it seems like the  
12                  last sentence in particular pretty much tracks with  
13                  what our finding was back in -- I think it was 2007.

14                 CHAIR BEACH:  All right.  So, Jackson;  
15                 this is Josie again, AMAD, what does that stand for?

16                 MR. ELLIS:  I can tell you.  Activity  
17                 median aerodynamic diameter.

18                 CHAIR BEACH:  Can you say it again?  
19                 Air --

20                 MR.    ELLIS:            Activity    median  
21                 aerodynamic diameter.  And basically particles  
22                 don't have standard sizes --

23                 CHAIR BEACH:  Right.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1                   MR. ELLIS:  -- so what they do is they  
2                   look at the settling velocity of these particles  
3                   and then they ascribe them to spheres.  So one  
4                   micron AMAD would be a particle that -- with a one  
5                   micron diameter that settles at that rate.

6                   CHAIR BEACH:  Okay.  That's helpful.  
7                   Thanks.

8                   Any other comments or questions on this  
9                   particular finding and resolution?

10                  MEMBER CLAWSON:  This is Brad.  I'm  
11                  good with it.

12                  CHAIR BEACH:  Okay.  Comfortable with  
13                  closing.  And --

14                  MEMBER POSTON:  No problems.

15                  CHAIR BEACH:  Okay.  John said yes.  
16                  Loretta?

17                  MEMBER LOCKEY:  Jim --

18                  MEMBER VALERIO:  Yes.

19                  CHAIR BEACH:  Jim?

20                  MEMBER LOCKEY:  Jim, yes.

21                  CHAIR BEACH:  Yes?  Okay.  So we agree  
22                  that this has been -- the resolution is good and  
23                  we will close that one.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1                   The next item is bioassay data.

2                   MR. FITZGERALD:    Yes, and I think  
3                   that's been pretty much vetted during the Work  
4                   Group sessions --

5                   CHAIR BEACH:    Yes.

6                   MR. FITZGERALD:    -- but again, our  
7                   original Site Profile question was that the  
8                   bioassay data has not been reviewed in terms of  
9                   completeness.    And that's essentially what the  
10                  V&V, the validation and verification that the NIOSH  
11                  accomplished last year did.

12                  CHAIR BEACH:    Yes, and that's covered  
13                  on page 19 of the TBD.

14                  MR. FITZGERALD:    Yes.

15                  CHAIR BEACH:    Yes.    Okay.    I'm  
16                  comfortable with closing that.    Any other  
17                  disagreements with closing the bioassay data?

18                  MEMBER CLAWSON:    No disagreement.

19                  CHAIR BEACH:    Okay.

20                  MEMBER VALERIO:    I'm good.

21                  MEMBER POSTON:    Good.

22                  MEMBER LOCKEY:    Good.

23                  CHAIR BEACH:    Okay.    Thank you.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1                   Now we'll look at admin codes. I know  
2 we've discussed that quite a bit also.

3                   MR. FITZGERALD: Yes, the original  
4 system that categorized the workers in terms of how  
5 the coworker model would be applied we thought  
6 would result in misassignments. And I think with  
7 the revised coworker model and the better  
8 information regarding worker categories that's  
9 been resolved.

10                   This sort of fits hand in hand with the  
11 question of what worker categories can you identify  
12 at Kansas City and how can you apply a coworker  
13 model to that to then adequately -- so we've already  
14 discussed the additional categories and  
15 understanding of the operations and the revised  
16 coworker model, so I think that in our view -- and  
17 I think tables 5.6 and 5.7 provides a lot more  
18 detail in that regard. We feel satisfied.

19                   CHAIR BEACH: Okay. Any comments or  
20 questions on that?

21                   (No response.)

22                   CHAIR BEACH: And to add to that, the  
23 two tables and then the -- talking about the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 un-monitored workers in 5.1.4, that -- I'm  
2 comfortable and I believe that I -- we can close  
3 that. Any disagreements?

4 MEMBER CLAWSON: No. Josie, this is  
5 Brad. And I also remember when we got into this,  
6 talking about this was people changing their job  
7 codes in the middle of it, seeing how that would  
8 be impacted. And they brought a level of comfort  
9 to me on that.

10 CHAIR BEACH: Right.

11 MEMBER CLAWSON: So I'm good with  
12 closing this.

13 CHAIR BEACH: Okay. Thank you.

14 MR. LOCKEY: I'm good with it.

15 MEMBER VALERIO: I'm good with it.

16 MEMBER POSTON: Okay. I'm okay.

17 CHAIR BEACH: Okay. Great. And the  
18 next one, photon calibration.

19 MR. FITZGERALD: Ron, was that the one  
20 you addressed? I'm trying to remember now.

21 DR. BUCHANAN: Yes.

22 MR. FITZGERALD: Okay. Maybe you can  
23 just out line that.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 DR. BUCHANAN: Yes, that was a question  
2 on how the shallow dose would be assigned. And  
3 also there was a need for some shallow dose in the  
4 coworker model. So they did revise the TBD to show  
5 coworkers' shallow dose on pages 76 and 77, and also  
6 a -- instead of using an abbreviated list of the  
7 dose conversion factors, they refer the dose  
8 reconstructor to the IG-001 guide, which lists a  
9 complete list of those.

10 And also, the shallow dose will be  
11 considered as less than 30 keV photons. For most  
12 applications the electron dose will be considered  
13 for certain tissues if it would produce a higher  
14 dose. But they have included a less than 30 keV  
15 photon as a general option because that usually  
16 produces the most dose.

17 And so we find that that has been  
18 clarified and corrected or expanded upon, and so  
19 we find that issue has been addressed.

20 CHAIR BEACH: Ron, I read somewhere,  
21 and I cannot find it now, of asking to get more  
22 included in the list, a complete list. Has that  
23 been -- is that done with the IG-001?

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 DR. BUCHANAN: Yes. Instead of using  
2 the abbreviated list in the TBD.

3 CHAIR BEACH: Okay.

4 DR. BUCHANAN: They just deleted that  
5 and said use the one in IG-001.

6 CHAIR BEACH: Okay. So then that's  
7 not something we need to carry on for the next TBD?  
8 That has been --

9 DR. BUCHANAN: That's been done.

10 CHAIR BEACH: -- satisfied? Okay.

11 DR. BUCHANAN: Yes.

12 CHAIR BEACH: I just could not pinpoint  
13 where I had originally read that. Thank you.

14 DR. BUCHANAN: Okay.

15 CHAIR BEACH: Okay. Questions on this  
16 one?

17 (No audible response.)

18 CHAIR BEACH: Are we in agreement that  
19 it can be closed?

20 MEMBER LOCKEY: I'm in agreement.

21 MEMBER VALERIO: Yes.

22 MEMBER CLAWSON: I'm good with it,  
23 Josie.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 CHAIR BEACH: Okay. And, John, as  
2 well?

3 MEMBER POSTON: Yes.

4 CHAIR BEACH: So we're all in agreement  
5 to close this item. Thank you.

6 Next one. We've talked about  
7 mag-thorium. This is --

8 MR. FITZGERALD: Yes, this was an  
9 original Site Profile issue, but we certainly have  
10 covered this in detail during the ER Review. And  
11 the issues at that time were just simply a better  
12 basis for the exposure that was being used, the one  
13 from 1970 and pretty much the bounding dose used  
14 for the operational periods. And so we're --  
15 again, we're good with what's in the Site Profile.

16 CHAIR BEACH: Okay. Thank you.

17 Any other comments or questions on this  
18 one?

19 (No response.)

20 CHAIR BEACH: Everybody agree that we  
21 can close this as well?

22 MEMBER VALERIO: Yes.

23 MEMBER CLAWSON: I agree.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 CHAIR BEACH: Okay.

2 MEMBER LOCKEY: Yes.

3 CHAIR BEACH: That concludes all of our  
4 Site Profile issues. I have to say this went very  
5 well.

6 I really appreciate, Pete, for your --  
7 you and your team's responsiveness on all the  
8 issues and pulling all the issues together. We had  
9 some very lengthy discussions and I think this went  
10 very well in getting all of those issues  
11 documented, and you guys were very responsive in  
12 rewriting the TBD.

13 So are there any additional items?

14 **Additional Items**

15 MEMBER CLAWSON: Josie, this is Brad.  
16 I've just got one, and I know that this is just a  
17 personal pet peeve with me. If you remember, we  
18 talked earlier about the fire that they had in the  
19 uranium. If we ever come across anything; and I'm  
20 just asking Pete or Pat, that -- you've already told  
21 me that you would do this, but I just wanted to  
22 remind you. The uranium fire earlier in the year  
23 and Rockwell's involvement in it, if we ever come

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 across anything like that, I'd sure like to -- I'd  
2 just like to be able to look at it, because it was  
3 kind of an interesting aspect.

4 MR. McCLOSKEY: Well, for awhile  
5 there, Brad; this is Pat, I was taken aback by your  
6 mentioning these fires and I wasn't able to find  
7 them, the ones that you were talking about. We  
8 kept saying, no, we didn't see anything about a big  
9 fire. But toward the end there; and we documented  
10 this in the SEC issues matrix, we did find a  
11 significant fire.

12 And they had a robust response where  
13 they went onto the roof even and did samples up at  
14 the ventilation that exhausted the stack and  
15 everything, and they did urinalysis on everybody.  
16 But there was no Rockwell involvement in the  
17 cleanup of that, so --

18 MEMBER CLAWSON: Right. And if you  
19 remember right, that was a discussion from one of  
20 the machinists --

21 MR. McCLOSKEY: Yes.

22 MEMBER CLAWSON: -- that when he  
23 left -- that's where I'm leaving it at. I'm not --

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 I'm just saying if we run across something, for my  
2 own knowledge, I'd just -- because it was  
3 interesting to me. If you remember me discussing  
4 this, how -- we asked how it got cleaned up and the  
5 individual without a hesitation says we did nothing  
6 with it. Rockwell came in. They cleaned it all  
7 up. And it seemed like there was something set up  
8 with Rockwell International to take care of issues  
9 like this.

10 So if we just ever run across something  
11 like that -- I know I'm always looking for some of  
12 these little stragglers to bring to a resolution.  
13 I'm not -- that's all I'm asking is if we find  
14 something just to help satisfy me.

15 MR. McCLOSKEY: Oh, yes, Brad, I'll  
16 make a note that if I ever see anything about a  
17 Rockwell cleanup of a fire there, that you'll be  
18 notified.

19 MEMBER CLAWSON: I appreciate that.  
20 Thank you.

21 CHAIR BEACH: And then we have the D&D  
22 question. Pete, you were going to send something  
23 to clarify that to -- or -- and I'm sorry, Pete was

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 going to send it out to us.

2 MEMBER McCLOSKEY: I'm going to look  
3 for it and give it --

4 CHAIR BEACH: Okay.

5 MEMBER McCLOSKEY: -- to Pete and he's  
6 going to distribute it.

7 CHAIR BEACH: Alright. So any  
8 other -- I think that was the last thing that we  
9 had.

10 Moving forward, I'm going to put  
11 together the -- finish putting together the slides,  
12 send them to Joe to vet for me and then send them  
13 out to the Work Group and Ted.

14 Does that sound like a reasonable path  
15 forward, Ted?

16 MR. KATZ: That sounds great.

17 CHAIR BEACH: Okay.

18 MR. DARNELL: Josie, are you going to  
19 want a presentation from NIOSH and SC&A also,  
20 or --

21 **Path Forward for Issue Resolution or**  
22 **Presentation to Board**

23 CHAIR BEACH: Well, I was just going to

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 ask Ted for background documents. I know there's  
2 a lot of background documents. Will you send those  
3 out to the Board or --

4 MR. KATZ: So this is Ted. So I can  
5 share with the Board the updated Site Profile; I'll  
6 do that, and the SC&A memo, the more -- most recent  
7 one, to review. But otherwise, I think your  
8 presentation suffices, Josie. I don't think you  
9 really need another presentation from NIOSH on  
10 this.

11 CHAIR BEACH: No. No, I would --

12 MR. KATZ: The Work Group's now closing  
13 out its review.

14 CHAIR BEACH: Yes. No, no, I was going  
15 to say that I felt that I could go ahead and close  
16 out these issues. And then if Joe was hand and  
17 anybody else to answer any questions that may  
18 arise, then I'm comfortable with just doing the  
19 presentation, to answer Pete.

20 MR. KATZ: Yes, absolutely. And Joe  
21 I'm sure will be on hand.

22 And I just want to call out Joe. I  
23 mean, I think you did an excellent job of running

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 through the issues in a way that everybody can  
2 follow and understand from the transcript, so I  
3 really appreciate that.

4 CHAIR BEACH: Yes, I do, too. And I  
5 think, if there's nothing else, we can conclude  
6 this meeting.

7 MR. KATZ: Yes.

8 CHAIR BEACH: Okay.

9 MR. DARNELL: Just one thing I wanted  
10 to let Brad know, that when NIOSH is doing record  
11 searches at whatever site, wherever you are in the  
12 country, and we do run across things from different  
13 sites. Each individual site's information is  
14 captured and is added back in. So if we come up  
15 with something that's pertinent to Kansas City at  
16 some place else that we haven't looked yet or in  
17 any future document captures, we'll be collecting  
18 that data.

19 MEMBER CLAWSON: And, Pete, this is  
20 Brad. I appreciate that and I do understand. And  
21 I'd like to take the opportunity to tell NIOSH and  
22 SC&A that it's been a pleasure working on this site.  
23 And we've been taking on some very complicated

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 problems and I feel that we've addressed them in  
2 a very good manner and I feel very good about what  
3 we've accomplished here.

4 I just -- me and Pat have kind of  
5 discussed this whole thing back and forth, and I  
6 just wanted to keep him a little bit prodded on that  
7 and go from there. But I do appreciate everything  
8 that everybody's put forth on this and I feel that  
9 we've come up with a very good Site Profile and  
10 stuff, so thank you.

11 CHAIR BEACH: I agree. And so, Joe,  
12 you should be seeing my slides by the first of next  
13 week.

14 MR. FITZGERALD: Alrighty.

15 CHAIR BEACH: Okay? Thank you,  
16 everyone. Appreciate your time.

17 **Adjourn**

18 MR. KATZ: Yes, thank you, everyone.  
19 Have a good rest of the week and weekend.

20 CHAIR BEACH: Thanks.

21 (Whereupon, the above-entitled matter  
22 went off the record at 11:26 a.m.)

23

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701