

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

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ADVISORY BOARD ON RADIATION
WORKER HEALTH

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KANSAS CITY PLANT WORK GROUP

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THURSDAY
MARCH 2, 2017

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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

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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

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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

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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.

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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.

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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

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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?

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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,

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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

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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

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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

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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.

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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.

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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

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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.

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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

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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 --

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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,

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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.

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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.

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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.

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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

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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.

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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.

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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.

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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

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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

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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.

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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 1×10^{-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

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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

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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

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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

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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

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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 --

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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

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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

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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

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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.

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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

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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

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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.

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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

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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.

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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.

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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

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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

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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

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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.

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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.

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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.

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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.

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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.

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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

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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.

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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?

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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.

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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.

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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

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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 --

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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

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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

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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

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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

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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

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