

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

CENTERS FOR DISEASE CONTROL

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NATIONAL INSTITUTE FOR
OCCUPATIONAL SAFETY AND HEALTH

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ADVISORY BOARD ON
RADIATION AND WORKER HEALTH

+ + + + +

KANSAS CITY PLANT WORK GROUP

+ + + + +

TUESDAY,
JUNE 10, 2014

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The Work Group convened in the Montreal Room at the Cincinnati Airport Marriott, 2395 Progress Drive, Hebron, Kentucky, at 9:00 a.m., Josie Beach, Chair, presiding.

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MEMBERS PRESENT:

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

ALSO PRESENT:

TED KATZ, Designated Federal Official
ELIZABETH BRACKETT, ORAU Team*
MAURICE COPELAND
PETE DARNELL, DCAS
JACKSON ELLIS, ORAU Team*
JOE FITZGERALD, SC&A
DeKEELY HARTSFIELD, HHS*
JOSH KINMAN, DCAS*
WAYNE KNOX
ARJUN MAKHIJANI, SC&A*
JOHN MAURO, SC&A*
PAT McCLOSKEY, ORAU Team
JIM NETON, DCAS
JOE PORROVECCHIO, SC&A*
MUTTY SHARFI, ORAU Team*
MATTHEW SMITH, ORAU Team*
JOHN STIVER, SC&A*

*Present via telephone

T-A-B-L-E O-F C-O-N-T-E-N-T-S

Welcome and roll call	5
Review of SEC Issues Under Consideration (SEC Issues Matrix)	
1. Data Completeness, Legibility and Accuracy	7
2. Worker Location, Job Category and Coworker Model	19
3. Chronic vs. Acute	41
4. Super S Uranium	78
5. Recycled Uranium	82
Break	84
Review of SEC Issues Under Consideration (SEC Issues Matrix) (continued)	
6. DU After 1971 and During and After 1997	86
7. Radioactive Waste	99
8. Metal Tritides	124
9. External Coworker Dose	129
10. Non-Penetrating Dose	133
11. N/P Issues	142
12. Fading of NTA	148
Petitioner's Comments	153
Lunch Recess	190

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Review of SEC Issues Under Consideration
(SEC Issues Matrix) (Continued)

13.	Magnesium-Thorium Alloy Operations ..	191
14.	Post-1993 Monitoring	254
15.	Thorium Oxide Operations	261
16.	Application of TBD 6000	221
17.	D&D Activities	267
18.	Accidents, Incidents and Fires in Worker's Record	277
19.	Potentially Unmonitored Exposures ...	279
20.	New Issue: Tritium	282
	Petitioner's Comments	299
	Path Forward	341
	Meeting Adjourned	344

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

2 (8:59 a.m.)

3 MR. KATZ: So, good morning,
4 everyone. Welcome to the Advisory Board on
5 Radiation and Worker Health, Kansas City Plant
6 Work Group. We're just getting started here
7 and we'll do that with roll call.

8 A few things to note before I go into
9 roll call is we have some papers for this
10 meeting and they are posted on the NIOSH
11 website, under the Board section, under today's
12 date.

13 So, people, for example, on the
14 phone can follow on there to see the issues that
15 we're discussing. And the agenda is posted
16 there as well. It's a pretty simple agenda. A
17 lot of little items, but they're all reviews of
18 SEC issues that the Work Group has begun with.

19 And there will be an opportunity,
20 also, for petitioner comments and questions.
21 And Josie, the Chair, will indicate when those
22 opportunities arise.

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1 And so we're talking about a
2 specific site. So, please speak to conflict of
3 interest as well when you respond to roll call.
4 And we'll begin with the Board Members in the
5 room.

6 (Roll call.)

7 MR. KATZ: Okay, then. Josie, it's
8 your meeting.

9 CHAIR BEACH: Okay. As Ted pointed
10 out, we do have a matrix, it is posted, and we
11 are going to follow down through the matrix.

12 There's 20 items on the matrix.
13 SC&A is going to lead the discussion. Breaks,
14 we'll try to take a break in the morning about
15 an hour and a half into this meeting, and a break
16 around lunch time, and then another break in the
17 afternoon, but nothing formal on those.

18 First item of discussion -- oh, and
19 welcome, everybody, to the first Kansas City
20 Work Group meeting. It doesn't feel like the
21 first meeting because we've been talking about
22 Kansas City for many, many months now, but

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1 welcome.

2 And we'll start with data
3 completeness, legibility and accuracy, our
4 first matrix item.

5 MR. FITZGERALD: Okay. This is Joe
6 Fitzgerald. We took essentially the Site
7 Profile issues that came out of the SC&A review
8 and carried them forward in the SEC matrix.

9 And, again, the notion was to go
10 ahead and present these to the Work Group, have
11 the Work Group, you know, certainly be aware of
12 these issues and sort of refresh your memories
13 on what was in the Site Profile, understanding
14 that, you know, the status of these from the SEC
15 standpoint is going to be a little mixed, and
16 that's how we intended to address them.

17 On this first one, data
18 completeness, legibility and accuracy, we
19 looked at sort of the standard approach that we
20 have done with other SECs looking at the records
21 from the standpoint of completeness and whether
22 or not in fact the validity and verification was

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1 done as far as the completeness of the records
2 and accuracy of the records.

3 And on this one we had essentially
4 two issues, really. One was the question of
5 whether or not the original records were
6 legible.

7 And in fact, when we looked at the
8 SRDB, some of the concern was just essentially
9 that some of these records just were not legible
10 in terms of different pieces of information
11 that were on the individual bioassays.

12 And one thing we wanted to do on the
13 onsite visit was, frankly, just look at some of
14 the original records, the ones that were copied
15 and transcribed into the electronic database
16 and see in fact whether that illegibility that
17 we were picking up was in fact in the original
18 records.

19 And what we found, essentially, was
20 that the original records were in fact legible
21 and could be relied upon. So, that was a very
22 helpful thing just to make sure that the very

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1 first order of business, that the records
2 themselves were usable, legible and we didn't
3 have a problem from the standpoint of that
4 completeness issue.

5 The second question that we wanted
6 to look at, and we looked at in other sites, is
7 whether or not in the transfer of the hard copy
8 records to the electronic database, whether
9 that had been validated, you know, whether or
10 not the transcription itself was a complete
11 transcription.

12 And during the onsite visit, we had
13 a chance to talk to Brent Nasca, who is the
14 health physicist at the site. And what he had
15 committed to do was to provide the QA/QC
16 methodology that the site had used when they,
17 you know, basically provided the electronic
18 database to NIOSH and he was going to provide
19 the summary.

20 And I guess that summary is going to
21 NIOSH, you all, so I think that will go a long
22 ways to settling out the second question as to

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1 how that was done and to what extent they QA'd
2 that process.

3 So this is kind of a QA issue here
4 and do we have a complete record, is it legible,
5 and when the electronic database was compiled,
6 did, you know, someone QA that to ensure that
7 that in fact was a representative record of the
8 original database?

9 And the only issue I think that's
10 outstanding on that one for the Work Group is
11 this QA/QC, you know, methodology that Mr.
12 Nasca had offered to make available to the
13 Board, to NIOSH and to SC&A.

14 And once we had a chance to look at
15 that then, you know, I think we'll pretty much
16 have what we need.

17 MR. KATZ: Before you go on, Joe,
18 just let me -- I understand there's some people
19 on the line who didn't have a chance or didn't
20 realize they had a chance to register their
21 attendance from the NIOSH ORAU Team.

22 (Roll call.)

1 MR. KATZ: Okay. Thank you. Go
2 ahead.

3 MR. FITZGERALD: Okay. That pretty
4 much sums it. I know NIOSH is still looking
5 forward to obtaining additional records, but
6 essentially the records that we've looked at,
7 with those provisions, I think, is complete and
8 we just need to know whether or not the method
9 is there. And that's essentially it.

10 MR. DARNELL: So, summarizing it,
11 we're okay with the legibility issue. We're
12 just waiting on the information on the QA/QC
13 --

14 MR. FITZGERALD: That's correct.
15 That's correct. And, you know, for some
16 perspective, I mean, legibility we typically
17 don't -- you know, it's five percent, 10
18 percent.

19 But I think in looking at the SRDB,
20 it seemed to be fairly extensive. So, we
21 wanted to at least reassure ourselves by
22 viewing the original records. So, I think

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1 that's fine. We're okay.

2 CHAIR BEACH: Right. So, the action
3 that I wrote down was just NIOSH is waiting for
4 those from Brent Nasca.

5 MR. DARNELL: Actually, I've been in
6 touch with Brent Nasca on and off about issues.
7 Pat has also. And it's just waiting on him to
8 get the time to get the information together.

9 CHAIR BEACH: Sure.

10 MR. DARNELL: And I want to take a
11 short divergence from the agenda for a second
12 just to make sure that the Board knows I will
13 be traveling to KCP in August.

14 It's not related to anything with
15 the Work Group. I'll be meeting with Brent
16 Nasca and his management. Apparently, he's
17 getting beat up by his management because they
18 feel we're finding a huge amount of radioactive
19 work ongoing at the site, when in reality it was
20 a very small portion of what they did.

21 It's just they're viewing our
22 scrutiny the same way that they view it as a DOE

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1 audit.

2 CHAIR BEACH: So, you're going to go
3 help smooth that out a little?

4 MR. DARNELL: Yes, try to smooth that
5 out and let them understand our process a bit
6 more. So, I just wanted to make sure everybody
7 knew that.

8 CHAIR BEACH: Yes, let us know how
9 that goes.

10 MR. DARNELL: I will.

11 CHAIR BEACH: Okay.

12 MR. FITZGERALD: Yes, the only
13 postscript on this one is that there is an
14 extensive database. I mean, we're not, you
15 know, we typically look at completeness also
16 from the standpoint of, you know, whether in
17 fact there was a representative number of
18 records.

19 In this case, there is a
20 considerable amount of records for the depleted
21 uranium work in particular. So, it wasn't a
22 completeness issue from that standpoint.

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1 CHAIR BEACH: Okay.

2 MR. FITZGERALD: Okay.

3 MR. KNOX: May I make a comment?

4 Because I look at completeness from a different
5 perspective. I look at it as a quality
6 assurance auditor.

7 And as somewhat of a mathematician,
8 completeness is based upon you being able to
9 satisfy your quality, data-quality objectives.

10 And so, there is a certain
11 percentage of the material that you have to look
12 at in order to determine completeness.

13 And, unfortunately, under this
14 program, the data-quality objective is a 99
15 percent probability. So, you cannot use data
16 that is less than 99 percent based upon the
17 propagation of errors method that all of us
18 studied in school.

19 So, all of the data that you use has
20 to be of a 99 percent plus data-quality in order
21 to be complete.

22 But as a person that worked in this

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1 field as a dirty-hands operational health
2 physicist, and I know, because there's a big
3 difference between a health physicist and an
4 operational health physicist, the data that has
5 been collected that I generated never met any
6 of the data-quality objectives.

7 It was not representative. It was
8 not complete. It was not comprehensive. We
9 never satisfied any of the basic quality
10 assurance objectives.

11 MR. KATZ: Thank you, Wayne.

12 And going forward, please, there
13 will be opportunity for public comment. So,
14 you will have the opportunity to make comments
15 and Josie will indicate when those are.

16 MR. KNOX: I'm a member of the public

17 --

18 MR. KATZ: Yes.

19 MR. KNOX: -- and not a member of this
20 group?

21 MR. KATZ: Yes, you are a member of
22 the public and you are a co-petitioner.

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1 MR. KNOX: But I have nothing --

2 MR. KATZ: Sir, there are
3 opportunities -- the public comment period,
4 when we have those, are opportunities for you
5 as a petitioner to provide your commentary.
6 And we'll indicate when those are.

7 MR. KNOX: But why do we have to wait
8 --

9 MR. KATZ: Because --

10 MR. KNOX: -- and make comments?

11 MR. KATZ: Because this is not --
12 this is a work group meeting. It's not a public
13 meeting of the Board. It's a work group
14 meeting and we have a lot of items to get through
15 and that's why we sort of manage it with
16 opportunities for public comment.

17 And you can take notes and remember
18 issues and provide them when you have that
19 opportunity, but we've brought all these people
20 together from around the country to do a lot of
21 work and get through a lot of work and we need
22 to sort of go forward in a systematic way with

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1 that.

2 And you will have opportunities to
3 speak. So, no one is circumscribing your
4 opportunity. It's just that we want to do this
5 in an orderly fashion. So, thank you.

6 CHAIR BEACH: Okay. Data
7 Completeness, Legibility and Accuracy, Work
8 Group members, any questions, comments on this
9 issue and the actions?

10 MEMBER CLAWSON: This is Brad. I
11 was just -- do we have a time frame that we're
12 going to get this information or -- from them,
13 or what are we looking at?

14 MR. DARNELL: We have a vague promise
15 of, yes, we'll do it, but no definite date.

16 That's part of the reason -- another
17 part of the reason why I'm going in August is
18 to try to get this stuff moving forward.

19 I'm basically going to be telling
20 their management, you know, when we get
21 finished looking, all the scrutiny that you're
22 feeling will go away. So, I'll try to help move

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1 it along.

2 MEMBER CLAWSON: Okay.

3 CHAIR BEACH: All right. Anything
4 else? Are we comfortable moving on to the
5 second item?

6 MR. DARNELL: Yes.

7 CHAIR BEACH: Okay. Two, Worker
8 location, job category and coworker model.
9 I'll just turn it over to Joe so he can give the
10 background and --

11 MR. FITZGERALD: Yes. This was
12 something that concerned SC&A in the Site
13 Profile review which, you know, I think a lot
14 of sites probably have a challenge in terms of
15 the assignment of job categories and work
16 locations for workers in circumstances where
17 the job tends to move or over time the job
18 changes.

19 In Kansas City in particular, we
20 were concerned about whether or not you could
21 implement a coworker model effectively if in
22 fact one could not rely upon the job categories

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1 the workers were assigned or what was recorded
2 in their dose records and whether they -- if
3 they in fact moved around, did different jobs,
4 how you would apply that.

5 So, really, what we wanted to do and
6 we started doing on the onsite visit was to get
7 a better picture over time how the plant
8 assigned jobs, how workers moved around the
9 plant floor, whether it was possible for an
10 operator -- or a non-operator to become an
11 operator and then move out of that job category
12 and whether that would confuse the picture as
13 to what in fact -- what work they in fact did
14 over time.

15 And there were a number of
16 interviews that took place before the most
17 recent site visit where there seemed to be an
18 indication that, yes, the job categories were
19 somewhat loose and people did shift jobs over
20 time.

21 And in fact on the work floor, there
22 was a fair amount of movement between jobs. If

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1 you think of Kansas City being sort of a large
2 work area where people worked in different
3 departments and stations, then that makes more
4 sense.

5 Now, what we've heard on this last
6 site visit, which is very helpful, was that
7 there was a pretty clear distinction between
8 the supervisory staff, for example, and the
9 operators on the floor.

10 And on specific operations where
11 you had workers doing the radiological work,
12 there was a reasonable distinction between
13 workers doing that work because it required
14 access to those particular departments and
15 required certain monitoring. So, there was
16 more restriction that way.

17 There was still, I think, some
18 indication of, you know, differences of opinion
19 between different interviewees as to how much
20 movement there might have been between workers
21 in one department versus departments where the
22 radiological operations were occurring, but,

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1 again, I think it's coming more in focus.

2 I think a number of Work Group
3 members were part of the interviews we held on
4 the subject. And I don't think we've nailed it
5 to the ground, but I think it's pretty clear
6 that, between supervisors and operators,
7 clearly a distinction. And that's important
8 because of the way some of these doses might be
9 assigned.

10 On the work floor, maybe a little
11 less distinction, but perhaps a little bit more
12 confidence that you didn't have workers that
13 were just willy-nilly moving from the non-rad
14 area into the rad areas.

15 Now, certainly there's a question
16 about adjacent operations taking place near
17 where the radiological materials were being
18 handled and to what extent those workers may
19 have been exposed, but I think from the
20 standpoint of the worker location job category.

21 We have some questions about the
22 classified operations, as does NIOSH, I see in

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1 the response, that we didn't really get a chance
2 to hammer out completely.

3 So, there are still some questions
4 about the workers that were assigned to some of
5 those specific operations.

6 And we also came up with some -- and
7 we'll get into this a little later, some
8 potentially new source terms, whether it be
9 tritium or some other items, where I'd want a
10 better understanding of who might have been
11 involved. For example, on the tritium
12 modeling, who might have been involved in that
13 and whether one can distinguish that subset of
14 workers.

15 CHAIR BEACH: And where that took
16 place.

17 MR. FITZGERALD: And where it took
18 place. We got very scant information about
19 that, for example. So, we're still, I think,
20 trying to pin down whether one can tie workers
21 to locations to source terms, but the picture
22 is getting better.

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1 I don't think that's going to happen
2 right away, but I think the picture is getting
3 better.

4 With each interview, we're getting
5 a little bit better focus on, you know, how that
6 assignment was done and where these operations
7 took place.

8 I know going in I had some sense of
9 Department 22 and 26 and whatnot, but I think
10 talking to the workers and getting a sense of
11 where the work took place, to what extent these
12 departments were in fact very much segregated
13 or not became --

14 MR. DARNELL: Excuse me.
15 Department 20 and 26.

16 MR. FITZGERALD: 20 and 26? Did I
17 say 22?

18 MR. DARNELL: You said 22.

19 MR. FITZGERALD: Okay, 20.

20 CHAIR BEACH: Well, I think there's
21 some issue on where the waste operations took
22 place. I don't think we've nailed -- and I know

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1 that's going to be later on, but that was also
2 some departmental issues, too. I don't think
3 we really nailed that down.

4 There may be some issues there with
5 who was involved in that, those activities.

6 MR. DARNELL: Are you talking about
7 the radioactive waste?

8 CHAIR BEACH: Yes.

9 MR. DARNELL: Okay.

10 CHAIR BEACH: Of course.

11 MR. DARNELL: And remember that we --
12 this is Pete Darnell, by the way. Sorry.

13 CHAIR BEACH: Yes.

14 MR. DARNELL: Remember that we
15 learned during the interviews it took a long
16 time to get enough radioactive waste to make one
17 drum.

18 So, wherever -- the drum was stored
19 in the aircraft engine test center -- testing
20 stands area.

21 So, we know where it was and it's
22 just how long it took to fill up the one drum

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1 that they needed to fill up before they had a
2 radioactive waste.

3 CHAIR BEACH: There's some documents
4 of 122 drums being shipped out in '64.

5 MR. DARNELL: Right.

6 CHAIR BEACH: So, yes. All I'm
7 saying is, yes, there's still some work to be
8 done in those areas.

9 MR. FITZGERALD: Well, you know,
10 certainly, you know, they filled the drums
11 where the work was occurring, the turnings and
12 what have you. And then they would ship it to
13 a holding area. And then, you know.

14 MR. DARNELL: And sooner or later
15 they'd have enough for a transport.

16 CHAIR BEACH: Sure.

17 MR. DARNELL: And it may have taken
18 years, it may have taken months or days to get
19 the 164. That's what we don't know.

20 CHAIR BEACH: Yes.

21 MR. McCLOSKEY: This is Pat
22 McCloskey.

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1 That's partly why I was jumping up
2 at the map during each interview to try to knock
3 this down in one --

4 CHAIR BEACH: Yes.

5 MR. McCLOSKEY: Understanding where
6 things occurred.

7 CHAIR BEACH: Yes.

8 MEMBER CLAWSON: Also, the year time
9 frame is where a lot of the things changed.
10 There were certain areas where you were
11 generating an awful lot of it on a daily basis.
12 And through the years, all of that changes back
13 and forth.

14 And in the later years, that's where
15 you see, you know, a time period where it's
16 taking a month or two to be able to fill up a
17 drum.

18 In the early years, no. It was --
19 there was big production of it.

20 MR. FITZGERALD: And we'll get into,
21 you know, I think there was some mention in one
22 interview, for example, this ballast depleted

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1 uranium.

2 And there was some question about
3 did that come from off site, was it fabricated
4 onsite and how was it handled? I mean, there's
5 some loose ends on some of the source terms.

6 MR. DARNELL: The primary indication
7 on that was they were forms that were brought
8 onsite to do the work that they needed to do,
9 but we don't have it fully nailed down.

10 MR. FITZGERALD: Yes. So, there's
11 some nailing down of --

12 CHAIR BEACH: Yes.

13 MR. FITZGERALD: -- source terms,
14 location, who was handling it. And I think
15 there's more research and more investigation to
16 go to nail that down.

17 MEMBER CLAWSON: Also, on placing
18 people in the areas, one of the things that
19 bothers me about this in using that process is
20 all we see is a snapshot of what that person was
21 at the last -- was he a supervisor, or over
22 previous years was he a QA person or a laborer

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1 or whatever else.

2 This has been one of the biggest
3 problems, we've come to find out. We just get
4 the snapshot at the end when he retired, he was
5 a supervisor. We don't see the 35 years before
6 that he was a laborer, welder, whatever he was.

7 DR. NETON: Well, we do get some of
8 that in the interviews. And the application
9 actually asks you over time what you did.

10 MEMBER CLAWSON: Right. I just want
11 to make sure that when we're trying to place
12 these people like this, that we look at it
13 because this is also one of the criticisms that
14 I've heard from the public is they have me as
15 working in this area, they don't have the 22
16 years I worked in this area.

17 MR. DARNELL: Well, I think one of
18 the things there is that there's a general
19 misunderstanding about how this site -- what
20 this site's actual function is.

21 The vast majority of the work that
22 went on here was non-radioactive, had nothing

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1 to do with the radioactive materials that we're
2 looking at.

3 We're looking at discrete
4 operations primarily on this site. There's
5 not a general spread of radioactivity, you
6 know, uranium just doesn't go away.

7 If there had been a spread of
8 contamination, we would still see that today.
9 We don't see that anywhere except in the one
10 area where they did the decontamination,
11 because we have records that said it's in that
12 area and that's where it was.

13 So, when we look at a worker and we
14 say -- we put him in Area A and we give him dose
15 for Area A and we ignore Area B, C, D and E where
16 they also worked, it's because there wasn't
17 radioactive material there.

18 MEMBER CLAWSON: And I understand
19 that, Pete, but one of my issues is that you
20 take, for example, the person that is in X area
21 as a machinist for so long, but then gets moved
22 out and can get moved back and forth and around

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1 because you realize, in my opinion, their
2 limitations of movement of these people was
3 more to control that they're at their work
4 station doing work more than it was limiting to
5 these areas.

6 Now, Kansas City is an example of
7 areas. And one area doesn't know what another
8 area is supposed to be doing.

9 MR. DARNELL: And there is a security
10 concern.

11 MEMBER CLAWSON: But -- for security
12 concerns, but most of the people still have the
13 same security processes.

14 My issue is, is that I have a hard
15 time believing that we can limit these people
16 into these areas, because there is a
17 utilization of manpower.

18 If you are a certified machinist,
19 you can be used in numerous different areas.
20 So, you do have a movement of that sort.

21 But as in the interview they said,
22 well, to say they couldn't go into any of these

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1 areas, I beg to differ because it was more of
2 a control of knowing where your workforce was
3 at and trying to make sure they were getting
4 eight hours for eight hours' pay.

5 MR. DARNELL: I don't think we're at
6 odds at all with that, Brad. I think that the
7 way NIOSH is looking at it, we look at it only
8 from the point of view of radioactive materials
9 exposure. So, all the other areas don't mean
10 anything to what we do.

11 So, if we have a worker that was on
12 a project, we give him the dose for that
13 project.

14 If he gets moved off the project,
15 it's like he's no longer a rad worker from the
16 dose reconstruction point of view.

17 So, yes, I agree with you that they
18 had worker transference between different
19 areas for manpower utilization.

20 When they go out of the machining
21 area that did the DU machining to go someplace
22 else, they're no longer a rad worker. So, we

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1 don't -- it's not something that we concern
2 ourselves about from the dose reconstruction
3 point of view.

4 CHAIR BEACH: So, the key is making
5 sure they get credit for the time spent in those
6 areas --

7 MR. DARNELL: In those areas.

8 CHAIR BEACH: -- that we are
9 concerned about. And so, there's more work to
10 be done on both sides.

11 Where are we at with action items?
12 And I'm assuming NIOSH has got action on this.

13 MR. DARNELL: Well, actually we're
14 going to meet at lunch, Joe Fitzgerald, Pat and
15 I, anybody else that would like to, and discuss
16 what our next set of data retrieval will be for
17 the site visit.

18 CHAIR BEACH: Yes.

19 MR. DARNELL: And when I'm there in
20 August, I'm going to set that up.

21 CHAIR BEACH: Okay. So, you're
22 talking sometime in September-October?

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1 MR. DARNELL: Probably
2 October-November. We're pretty busy with INL
3 through September.

4 CHAIR BEACH: Yes. And I know there
5 is a lot more work that needs to be done. So,
6 okay. So, this one I'm going to leave as an
7 open and maybe we'll come back to it with some
8 specifics or I can actually just say site visit
9 -- future site visit.

10 MR. DARNELL: Future site -- right.
11 Part of the site visit.

12 MR. FITZGERALD: But on this one, I
13 think, you know, Brad raises the case where, can
14 we in fact by virtue of the CATI or, you know,
15 interview or whatever follow this worker and
16 apportion whether or not the worker was in a rad
17 area subject to dose reconstruction or not,
18 moving around, whether the records are clear
19 enough and accurate enough to give you that
20 ability or not.

21 And I think we haven't had a chance
22 to dive in that deep, but I think what we were

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1 getting from the interviews was some sense of
2 whether or not these different worker
3 categories were relatively segregated or not.

4 And I think the level of QA you're
5 talking about is maybe to go a little deeper and
6 just make sure that we could maybe sample some
7 of these operators or machinists and see
8 whether the records would lend themselves to
9 that.

10 MR. DARNELL: One thing that we have
11 to make sure we realize is that when we're
12 looking at categories of workers for dose
13 reconstruction, it's only when they're on the
14 rad project.

15 MR. FITZGERALD: Right.

16 MR. DARNELL: So, a machinist that's
17 on the rad project will get dose while a
18 machinist that's working --

19 MR. FITZGERALD: Right.

20 MR. DARNELL: -- next door won't
21 get dose. So, it's not an across-the-board --

22 MR. FITZGERALD: No.

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1 MR. DARNELL: -- across-the-plant

2 --

3 MR. FITZGERALD: That's my point.

4 MR. DARNELL: -- level of dose.

5 MR. FITZGERALD: You're looking at a
6 machinist. And if the machinist did rad work,
7 then he would be in. If he moved out of that,
8 he would be out, but is that covered in the
9 records adequately or not?

10 MR. DARNELL: And one of the things
11 we have to realize, I mean --

12 CHAIR BEACH: You'll get your shot.

13 MR. DARNELL: Oh, I'm sorry, Jim. I
14 didn't know you -- go ahead, please.

15 DR. NETON: I was just going to say
16 this is not unique to Kansas City Plant.

17 MR. FITZGERALD: No.

18 DR. NETON: This happens at every
19 single site. And if we get to the point --
20 we're going to have plenty of bioassay data from
21 what I've seen. So, we will have a coworker
22 model.

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1 CHAIR BEACH: Right.

2 DR. NETON: And then as we all know,
3 we have a two-flavor coworker model, a 95th
4 percentile for the whole distribution.

5 And so, if you can't ascertain into
6 which category that person goes, we will always
7 default into the 95th percentile.

8 So, it's not a matter of can we do
9 something or not, it's how well we can parse out
10 where they were.

11 And if it comes to be that we can't,
12 we can still use this two, you know, box model.
13 So, I really don't see that this is an SEC issue
14 at all.

15 You really have to look at the
16 quality of the bioassay data which we still
17 haven't finished yet, but remember the coworker
18 model applies to people that weren't monitored.

19 A lot of times we get balled up in
20 thinking, was this guy monitored? We have a
21 lot of people that were monitored and they're
22 going to have monitoring data. We're going to

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1 apply this model to people that had zero
2 monitoring data and they're going to fit either
3 the high end or full distribution.

4 So, a lot of this is detail stuff,
5 in my opinion, and really Site Profile-type
6 issues given the amount of bioassay data I think
7 I see we have, but we still have to prove that.

8 MR. DARNELL: One of the pieces of
9 data that we have not collected yet is some of
10 the bioassay data that's internal to the
11 workers' medical records.

12 And we know that that data exists.
13 Actually, KCP told us it will cost 70 grand for
14 them to go in and pull the data.

15 MR. FITZGERALD: What data?

16 MR. DARNELL: What?

17 MR. FITZGERALD: Cost 70 thousand to
18 pull what data?

19 CHAIR BEACH: I thought that was
20 in-house.

21 MR. DARNELL: The bioassay data from
22 inside their medical records.

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1 CHAIR BEACH: Yes, I was going to say
2 I thought that was an in-house bioassay --

3 MR. DARNELL: Again, the situation
4 down there is getting very strange. So, and I
5 --

6 MR. McCLOSKEY: For the uranium,
7 depleted uranium machining work, the large part
8 of the work that they did, they did have
9 in-house urinalysis.

10 But for the early '50s, the natural
11 uranium machining, it was sent out to Los
12 Alamos.

13 CHAIR BEACH: Yes, it wasn't until,
14 what, '64 I think they started in-house more.

15 MR. McCLOSKEY: I would say '58-'59.

16 CHAIR BEACH: '58-'59, okay.

17 MR. McCLOSKEY: Yes. So, that's
18 part of the data collection we'll be going after
19 in the subsequent visit.

20 CHAIR BEACH: Okay. Anybody else on
21 the second topic? Work Group members wish to
22 make any comments, questions? I think the

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1 action items are noted.

2 I think, Ted, you're keeping track
3 of action items. I am, and I believe Joe is
4 too, as well as Pete is. So, we should have it
5 very well covered. Very nice.

6 Okay. So, the third issue is
7 chronic versus acute. This is one of Ron's
8 issues and I think John Mauro --

9 MR. FITZGERALD: No, I --

10 CHAIR BEACH: No, you've got it?

11 MR. FITZGERALD: I'll handle it.

12 CHAIR BEACH: Okay.

13 MR. FITZGERALD: Yes, this is one of
14 the Site Profile issues and I think Ron, who
15 unfortunately couldn't make it this week, went
16 through the bioassay data that NIOSH provided
17 and I don't think there is any issue on the acute
18 versus chronic having looked at that data in
19 some detail, which we didn't have a chance to
20 do in the Site Profile review.

21 The only question left on that one,
22 frankly, is trying to get some sense of the --

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1 of generally, the higher readings in '60-'61
2 which is just additional information as to
3 maybe, was that strictly anomalous, or was
4 there any reason to see that relative spike
5 then.

6 And that doesn't portend anything
7 more than just wanting to understand the
8 operational, you know, reasons, perhaps, for
9 seeing that relatively higher reading.

10 So, on this one, I don't think
11 there's a chronic versus acute issue that I
12 would see us pursuing or recommending that it
13 be pursued by the Work Group, but we do want to
14 take the opportunity going back to the site to
15 spend a little bit more time understanding what
16 we're looking at in '60-'61. I think that was
17 the one issue left.

18 And I don't know if you've had a
19 chance, Pete, to as you're collecting more
20 data, shed any more light on that. That was
21 still, I think --

22 MR. DARNELL: No, I didn't.

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1 MR. FITZGERALD: -- one that came
2 up a while back and I thought we even asked Brent
3 Nasca about that and, you know, it was something
4 that he sent back, right?

5 MR. McCLOSKEY: Yes, there's
6 something --

7 MR. FITZGERALD: But he didn't have
8 any -- he didn't have an explanation per se.
9 There was just no --

10 MR. McCLOSKEY: No, Dr. Richard
11 Traub in 2005 had a conversation with Brent
12 Nasca about this. It's in the Site Research
13 Database 49002, and asked this exact question.

14 MR. FITZGERALD: Right.

15 MR. McCLOSKEY: And Brent came up
16 empty at that point and --

17 MR. FITZGERALD: Yes, it may just be
18 left as just one of those things. It just was
19 something that we wanted to take another look
20 at before letting it go and perhaps in looking
21 at some of the incident data, you know, the
22 weeklies or something maybe would shed some

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1 light on it.

2 MR. DARNELL: I would suggest that we
3 close Issue 3 and roll the -- looking at the
4 incidents into Issue 18.

5 MR. FITZGERALD: Is that the
6 incident one?

7 MR. DARNELL: That's the incident
8 one. The two issues are fairly closely
9 related.

10 MR. FITZGERALD: Yes, I wouldn't
11 have any objection to that.

12 CHAIR BEACH: Well, I guess for me
13 because it is cited in the coworker model and
14 that would be captured -- I know you don't have
15 one developed yet.

16 DR. NETON: I guess I'm a little bit
17 confused as to why the inclusion of some
18 incidents in the coworker model would be
19 appropriate.

20 I mean, this happens somewhat
21 routinely. If you -- a coworker model is a
22 chronic exposure model.

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1 We've been down this path many times
2 where if you're chronically, if you're
3 routinely monitored, it captures the incidents
4 that may have occurred and there may be spikes
5 in the data that were related incidents, not
6 chronic exposure.

7 But the fact is if you include those
8 in the coworker model, it will then bias the
9 results in a claimant-favorable direction and
10 this is not unusual to me.

11 MR. FITZGERALD: Yes, I don't think
12 we would argue with that, but you want to
13 reserve the coworker model as a discussion --

14 CHAIR BEACH: Well, I was just
15 curious about it, yes. That will be a
16 discussion, I'm sure, at some point when that's
17 developed.

18 I guess my question is, do we have
19 all the source term? Would there have been
20 some source term during '60-'61 that we haven't
21 -- that may have led to that spike?

22 I don't know and I'm only bringing

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1 that up because --

2 MR. DARNELL: And this is very
3 similar to other sites. Right now we have the
4 data that we have. And so, we think we know
5 what was going on in '60 and '61.

6 If we find more, we'll have to add
7 it.

8 CHAIR BEACH: Yes.

9 MR. DARNELL: But right now it is
10 what it is and we have to go forward with what
11 we have.

12 CHAIR BEACH: Right. And I do
13 understand that. And you said you have no
14 objection to moving it to --

15 MR. FITZGERALD: Well, yes, the only
16 issue you're talking about is we have not had
17 a chance to look at the coworker model. The
18 Work Group hasn't had a chance.

19 If that's the only reason, then the
20 acute versus chronic as a subject -- and that
21 was the way it was cited. That was the way it
22 was just cited in the Site Profile.

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1 But if that's not the right
2 characterization at this point, then we might
3 want to just keep it as a coworker model
4 question and reserve it for --

5 DR. MAURO: This is John. I'd like
6 to add a little here, if I may.

7 CHAIR BEACH: Oh, please do, John.

8 DR. MAURO: Yes, I was talking a bit
9 with Ron on this very subject and it really goes
10 in terms of looking at this issue because, as
11 you said, this is a coworker model issue. And
12 when Ron and I were discussing it, he was sort
13 of describing the kinds of data.

14 I have not been looking at the
15 actual air sampling or bioassay data. I've
16 been looking at another issue, but Ron and I did
17 have a chance to talk.

18 And the philosophy, I think as a
19 coworker model issue and the incident issue, I
20 think they should be kept separate.

21 I understand the rationale for why
22 there's good reason to combine them, but I --

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1 there's also good reason to keep them separate.

2 The reason being -- and certainly
3 Jim has alluded to this is that when you're
4 building a coworker model, you think in terms
5 of a worker population that is being routinely
6 monitored or air samples collected or bioassay
7 data being collected.

8 And you develop an understanding of
9 the work that they were doing and the patterns
10 of concentrations in urine or the patterns of
11 the air concentrations that you observe.

12 And you're in a position where of
13 course the workers that you have the data, you
14 can reconstruct doses if there's sufficient
15 accuracy and adequacy. And those are of course
16 questions that are before everyone.

17 But given that you do have -- this
18 is a supposition that you do have, you know,
19 accuracy and completeness for the workers that
20 were covered, then you comment to yourself,
21 okay, there were other workers that were not,
22 let's say, bioassayed. And the question

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1 you've got to ask yourself is, okay, can somehow
2 we use the data that -- for the workers that were
3 bioassayed and apply it to these other workers?

4 And there's certain tests you have
5 to pass to convince yourself that that is a
6 reasonable thing to do. And that goes toward
7 these spikes, you know.

8 If the worker -- the workers that
9 were not monitored and you're going to use the
10 coworker model and apply it to them, the way I
11 look at it and I think the way we've looked at
12 in the past is that if there's reason to believe
13 that these workers were involved in a different
14 category of work where the potential for
15 exposure was less than the workers that were
16 monitored, that's an important question.

17 If there's reason to believe that,
18 no, these workers were involved in similar
19 activities and, therefore, the coworker model
20 would apply to them, but then you pose the
21 question, okay, but there were these spikes and
22 that sort of messes you up a little bit.

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1 You say, well, how do we know that
2 some of these workers that were not monitored
3 may have experienced an exposure to a site, the
4 one case you folks just mentioned.

5 And the real -- and the way I get
6 comfortable with this is I have to feel that the
7 nature of the health physics oversight was such
8 that when -- that there was in place programs
9 when such spikes occurred, there's reason to
10 believe that they were picked up by the air
11 sampling program and that there was follow-up
12 so that you could feel confident that you didn't
13 have a person who was unmonitored that somehow
14 found themselves involved in a spike
15 circumstance.

16 And here's where the judgment comes
17 in. Do we feel confident that if that did occur
18 to one of these unmonitored workers, that
19 there's good reason to believe that it would
20 have been captured?

21 And that's how I look at, get a
22 degree of comfort whether or not you can build

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1 a coworker model and, second, how do we feel
2 confident that the worker himself would have
3 been captured and covered if in fact there was
4 an unusual circumstance or nature or campaign
5 or operation or transient.

6 So, I want to just pass that on how
7 I think we have been looking at this in the past
8 and I think it applies here.

9 MR. DARNELL: I think that one of the
10 things we need to come to an understanding about
11 that is fundamental to all the information that
12 you talked about, John, is what kind of site
13 this actually is.

14 This is not similar to INL, Rocky,
15 Hanford where the worker just by being on the
16 site is exposed to radioactive material,
17 exposed to radiation.

18 The operations here are very much
19 like Pinellas where it was very discrete. The
20 area was a small area. Workers were controlled
21 by security measures more than health and
22 safety measures on who was exposed and who was

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1 not.

2 That's the fundamental view of this
3 site that NIOSH is taking, you know. These are
4 discrete, small operations of radioactive
5 material handling and machining and what have
6 you that went on.

7 Small within the footprint of the
8 site. Small within the overall work of the
9 site. Small within the workforce that
10 actually took place.

11 So, when you brought up on the
12 coworker model whether it would apply to
13 workers outside of those small footprints, I
14 believe you hit it right on the head with this
15 site, it is not something that's going to be
16 applicable to the vast majority of the
17 workforce on the site.

18 And what we have to decide and come
19 up with is whether we're going to view this site
20 as the discrete operations that it appears to
21 be from NIOSH's point of view, or whether it's
22 an operation where everybody and everything

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1 could have been exposed from these small,
2 discrete jobs that they did.

3 MR. McCLOSKEY: One thing I'd like to
4 say to help make John comfortable with any
5 spikes in '60 and '61, you said you'd feel
6 better if there was a good HP program in place
7 to catch any anomalous situations.

8 So we know that in '51 we were
9 sending urinalysis to Los Alamos. And so, that
10 wasn't as well-documented yet, but by '59 we
11 have a ton of urinalysis records and good air
12 monitoring records for that depleted uranium
13 machining work.

14 So, certainly by the time your
15 concerns over the '60-'61 spikes, we had a
16 pretty good HP program in place that's
17 documented.

18 MR. DARNELL: Well, one correction
19 to that. We really can't look at it as a health
20 physics program. This was an environmental
21 safety and health program. It was run by
22 industrial hygienists until very late in the

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1 operations of the Kansas City Plant.

2 So, they were doing the right things
3 that a health physics program would do -- at
4 least we think they were doing the right things
5 that a health physics program would do, but it
6 was run by the industrial hygiene group, not a
7 health physics group.

8 MR. McCLOSKEY: That's true.

9 DR. MAURO: I think you've made some
10 very important points here and I understand
11 what you're saying.

12 In effect, what I heard is that
13 there were these controls. You have these
14 discrete operations where there was
15 considerable control over access and who was
16 working on it when and where.

17 And, therefore, the argument would
18 be made that the -- that given a person that does
19 not have, let's say, bioassay data -- we'll talk
20 about the bioassay term. I'll be talking later
21 about the earlier years when they were doing
22 machining. That's separate.

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1 But for the bioassay and coworker
2 idea, the -- we're saying this is important that
3 you feel that there is strong evidence that
4 there were -- that you could say which workers
5 were in fact involved in what activities and
6 where they were and that the records show that
7 those controls over the discrete operations are
8 clearly identified.

9 So, when you have a worker, you
10 could say with a degree of confidence, no, he
11 was not involved with that operation. He was
12 not in that area where there was such a
13 potential, let's say, for airborne uranium dust
14 loading.

15 That's a very important argument to
16 be made and why you can parse the ability to who
17 should be considered to be covered by the
18 coworker model and who should not.

19 And then if in fact there's a reason
20 to believe that he was in this discrete area
21 doing that work, but for some reason was not
22 under the bioassay program, I don't know if

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1 that's a plausible scenario that if he was
2 there, he would have been covered. But if
3 there's a reason to believe that he could have
4 been there and he wasn't covered, then the
5 argument would have to be that, yes, he was
6 there or could have been there, we do not have
7 bioassay data, but we do believe that the nature
8 of the coverage was such as if there was a
9 transient or an unusual circumstance because
10 of, let's say, the air monitoring program,
11 let's say, was effective, you would have
12 captured that. And this goes to the weight of
13 evidence.

14 Certainly I would agree that if he
15 was there and you have lots of data, you could
16 certainly reconstruct and build a coworker
17 model for what I would call the chronic exposure
18 scenario. That's classic coworker model
19 development and that's well-established.

20 And the question of course always
21 is, is it possible we might have missed a spike.

22 And I think you were making an

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1 argument, a good argument, but certainly the
2 documentation has to be there that we know who
3 the people were that were potentially involved
4 with these discrete operations and that there
5 was the health physics coverage that they may
6 not have been monitored or bioassayed, but we
7 have good reason to believe that we could build
8 a coworker model that would cover them for the
9 chronic exposure.

10 And if they were involved for some
11 unusual reason in some episodic situation that
12 developed, or campaign, that we would be able
13 to -- we would have captured that person. He
14 would not have escaped coverage.

15 I guess that's how I look at this.

16 CHAIR BEACH: Okay. So, I would
17 propose that we separate out the question, can
18 anything else be done to help identify that
19 '60-'61, move that to incidents, 18. Leave the
20 first part of this open in 3. That would be my
21 proposal at this juncture.

22 MR. DARNELL: The first part of what?

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1 CHAIR BEACH: The first part of the
2 coworker, the potential for acute intakes, not
3 all operations were continuously steady-state
4 processes.

5 MR. DARNELL: Well, this is a TBD
6 issue that we're talking about, of course, for
7 the coworker more so than --

8 CHAIR BEACH: Yes, it is definitely
9 leaning in that direction.

10 MR. DARNELL: So, I don't understand
11 why we would leave it open for the SEC, because
12 that's part of the TBD.

13 CHAIR BEACH: Well --

14 MR. DARNELL: Maybe I'm just being
15 simpleminded. I don't know.

16 CHAIR BEACH: Oh, I doubt it.

17 MEMBER CLAWSON: Josie, could I make
18 a comment?

19 CHAIR BEACH: Sure.

20 MEMBER CLAWSON: Pete made the
21 comment that these are discrete operations and
22 they're in these little areas.

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1 I want you to remember the way the
2 facility is built and that the hallways run
3 right alongside those discrete operations at
4 the plant which had a positive airflow system.

5 So, in the earlier years especially
6 with the uranium machining and so forth like
7 this, I do not think that you can say that all
8 of that was confined to that area.

9 You have processes going on and,
10 yes, they were trying to control. But if you
11 remember when you went to the first interview,
12 those walls only went up so far and you had a
13 whole empty spot. You had a positive airflow
14 blowing in there and going in.

15 To me, I don't think that that was
16 contained just in those areas. So --

17 MR. DARNELL: One thing you have to
18 recognize about uranium machining is the actual
19 physics of the material as it's being released
20 from the lathe or whatever machine that they're
21 machining on.

22 About the maximum distance that

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1 uranium is going to travel before it falls out
2 is about 20 feet in any direction.

3 We've seen that in operating
4 experience at Fernald, it's in the uranium
5 handbook that DOE uses and, you know, even
6 though the walls didn't go all the way to the
7 ceiling that was 30 feet tall --

8 MEMBER CLAWSON: Wasn't 30 feet
9 tall.

10 MR. DARNELL: Well, I don't expect
11 that the uranium traveled far, because we have
12 no indication of it now. There's no spread of
13 contamination.

14 And for the exposures to occur that
15 you're talking about, we would have had to have
16 a spread of contamination.

17 It's impossible to say that a worker
18 walking by, that the workers walking by were so
19 effective in picking up the contamination that
20 was transferred during the machining operation
21 that none was left in the plant.

22 See, that's the scenario that

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1 you're describing. The workers could have
2 walked by and been exposed outside of the area,
3 but there would be no trace of the radioactive
4 material outside of the area off of those.

5 MEMBER CLAWSON: Well, and I
6 understand what you're saying, but also, too,
7 it's interesting to me that we have an operation
8 that is going on like this and we only have two,
9 maybe three D&D processes that we even have on
10 the books.

11 And to tell me that we -- that's
12 telling me we're not seeing the whole picture
13 of what actually went on in there.

14 And I know from experience that it's
15 a marvelous thing what paint does on concrete
16 to be able to adhere things down there.

17 So, I just want -- I just wanted to
18 be able to say because NIOSH is looking at it
19 this way. And as it is in everything,
20 everybody's got their own opinion and we're
21 maybe looking at it a little bit different.

22 I just want to go on the record as

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1 stating that I think that there is a lot more
2 going on in there.

3 I think that there -- we do not
4 really have a full grasp yet of what went on with
5 that product because it's amazing to me that we
6 have this much machining and so forth like that
7 and we've only come across two D&D periods.

8 Plus, when we did get into the
9 trenches and so forth, we had -- it was fairly
10 nasty.

11 So, this is part of the reason why
12 we're looking at some of this stuff in a little
13 bit of a different look. And it's not
14 uncommon. This happens at every site and
15 everything. So, I just want to go on the record
16 to let you know we --

17 MR. KNOX: So I am sorry. This is
18 absurd.

19 (Simultaneous speaking.)

20 MR. KNOX: -- said that that was
21 uranium in the urine samples of most workers.
22 You have it documented.

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1 MR. KATZ: Wayne. Wayne, you will
2 have your opportunity to speak, but please do
3 not burst into the dialogue here.

4 MR. KNOX: But he's saying --
5 (Simultaneous speaking.)

6 MR. KATZ: Wayne, I need you to be
7 able to control, please, your involvement.
8 Now, you will have opportunities to speak, but
9 please do not interrupt the dialogue. Thank
10 you.

11 DR. MAURO: This is John.

12 Brad, I was about to make a comment
13 because you're bringing up an area that I did
14 look at very closely and I think you bring up
15 a question that is important.

16 When I read the information, I'm
17 looking at what section it's in. Section 5.1.2
18 of the -- I guess it's the Site Profile. I'm
19 not sure. I think it's the Site Profile.

20 I looked at it carefully and there's
21 a lot of very good discussion of the machining
22 operations that took place in '50 to '55. And

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1 you're correct, you know, those operations did
2 generate a lot of aerosols, airborne uranium
3 oxide.

4 And the way it reads is that the
5 operations were confined to what's called the
6 main manufacturing building in Department 49X,
7 okay.

8 And I looked very closely, and we'll
9 be talking about this later, at the ability to
10 reconstruct the airborne dust loading and
11 exposures to workers involved in those
12 machining operations for uranium and -- but I
13 was operating under the premise that it was a
14 facility set aside and specifically prepared
15 for just those operations, which were
16 substantial operations.

17 You're bringing up an issue now that
18 I think is important and that we do need to get
19 closure on.

20 If it turns out that the nature of
21 that particular building and where those
22 operations took place, the machining

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1 operations, they were basically lathing, lathe
2 operations and cutting operations. You know,
3 if we can't -- if you're saying that the nature
4 of the layout was such that you really can't say
5 that confined the area and that there was the
6 ability for airflow from that area where the
7 work took place and perhaps other locations,
8 and I have to say I did not look at that, I took
9 this idea of the main building -- the main
10 manufacturing building, Department 49X, as
11 being a relatively large area, well-contained
12 with, you know, isolated from the other
13 facilities where operations were going on.

14 If there's reason to believe that
15 there could have been airflow patterns where
16 there were not adequate barriers between, let's
17 say, different operation areas where airborne
18 dust loadings that were being generated during
19 the machining operations in the main
20 manufacturing building could very well have got
21 to other places, we do need to look at that.

22 I have to say I do not especially --

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1 I haven't modeled it, but, you know, when you
2 generate these airborne uranium oxide during
3 machining, we're treating them as five micron
4 AMAD airborne particles with a relatively slow
5 deposition velocity, 0.00075 meters per
6 second.

7 And then if you think in terms of
8 airflow in-room and the air patterns if there
9 are ways in which the air is moving and leaving
10 that area and going to other areas, I question
11 whether or not you could say with a degree of
12 confidence that all of the airborne uranium is
13 going to be confined to that Department 49 main
14 manufacturing building.

15 I did not look at that issue. I
16 confined myself to looking very closely at
17 those operations in that building at that time,
18 but I did not look at the possibility that
19 somehow air containing airborne uranium could
20 have possibly left that which opens up perhaps
21 other workers that might have experienced some
22 exposure to airborne uranium due to the

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1 machining operations.

2 MR. DARNELL: John, if you look at
3 Table 11 in the TBD when you get a chance, it
4 talks about the statistical parameters in
5 depleted uranium in workplace air. And you're
6 looking at median values on the level of minus
7 13 microcuries per cubic centimeter done in a
8 variety of locations like the mixing room, the
9 airlock over-shower, rubber mill room, mill
10 stack and dispersion roll.

11 So, there was air sampling that was
12 done not only in the area, but outside of the
13 area.

14 DR. MAURO: And you're saying that
15 includes 1950 to '50?

16 MR. DARNELL: Actually --

17 CHAIR BEACH: '58.

18 MR. DARNELL: -- it's from '58 to
19 '70.

20 DR. MAURO: Oh, I agree with you.
21 Don't get me wrong. Please, I don't want to
22 mislead the Work Group here.

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1 I confine the comments I just made
2 to the 1950 to 1955 time period when the
3 machining operations were going on and there
4 were no air sampling or bioassay data there that
5 will allow us to reconstruct those doses.

6 I focused in primarily on the use of
7 TBD-6000 as a vehicle to try to place a
8 plausible upper bound on those exposures. And
9 that was the point I was trying to make.

10 Those analyses were limited to
11 those machining operations taking place in the
12 main manufacturing building area.

13 So, it's not the time period you had
14 just mentioned. I understand what you're
15 saying.

16 MR. DARNELL: Okay.

17 DR. MAURO: Post-1958, I did look at
18 the data. There is a considerable amount of
19 air sampling and bioassay data throughout the
20 facility, but I did not look closely at that.

21 CHAIR BEACH: John, I think Brad had
22 another question for you.

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1 MEMBER CLAWSON: My thing is, John,
2 I want to make sure that you look at the prints
3 because, realize, this is just one, large
4 building.

5 And this is what we were talking
6 about when we toured this area because we went
7 down to where 49X was and it was just across from
8 electronics.

9 So, this is one whole building, one
10 whole basement. It's just one large facility
11 that are all part of this. And this is part of
12 my issues with this.

13 DR. MAURO: And, Brad, I agree. I
14 think that an action -- well, in my mind,
15 knowing the work that I did, you'll see
16 eventually the White Paper that is in draft form
17 right now, you'll see it, I presume, fairly
18 soon, it speaks about the main manufacturing
19 building and Department 49X which may turn out
20 to be a very large area and encompass lots of
21 workers.

22 Not only workers that were involved

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1 in machining operations, but perhaps workers
2 involved in other operations in the vicinity.

3 Under those circumstances, a
4 question has to be asked. The dust loadings
5 which are turned out that are being used for the
6 machining operations in '55 to '55, they're
7 using a number, a large number, 5,000 dpm per
8 cubic meter.

9 The question becomes who are you
10 going to apply those to and where those
11 boundaries are.

12 You'll see as we get into it later,
13 that that's a good number. I'm very
14 comfortable with the way in which they
15 implemented TBD-6000. We'll get into that a
16 little bit why --

17 CHAIR BEACH: Yes, let's get --

18 DR. MAURO: But I think we raise this
19 issue, though, that's important in that, you
20 know, how far does that extend, you know? How
21 many people are going -- are covered within that
22 envelope of the TBD-6000 paradigm?

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1 So, anyway, I guess I'll stop at
2 that point. If there's some question
3 regarding that --

4 CHAIR BEACH: I think Joe is going to
5 move us forward. This has kind of morphed into
6 something other than the chronic versus acute.
7 So, I think --

8 DR. MAURO: Yes.

9 MR. FITZGERALD: Let me see if I can
10 capture what -- again, this terminology is a
11 little stunted coming from the Site Profile,
12 but I don't think the issue -- its label is
13 chronic versus acute. We're on board on that
14 question. We don't have an issue.

15 We think it's a TBD issue at best,
16 but we don't have an issue from the SEC
17 standpoint.

18 I do think the '60-'61 could in fact
19 be addressed in Item 18, as Pete has suggested.
20 I think that's appropriate.

21 CHAIR BEACH: Right.

22 MR. FITZGERALD: And I do think,

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1 though, that we do have some questions about the
2 application of the uranium coworker model
3 particularly as we're identifying some source
4 terms that are ones that are relatively new, as
5 we mentioned before.

6 And we do want to, I think, reserve
7 judgment as to whether that would encompass the
8 worker population that's been identified or
9 not.

10 And I think that's part of what
11 Brad's raising and to some extent what John is
12 mentioning.

13 So, I'd rather see this really
14 focused on that rather than this chronic versus
15 acute, which I don't think we're disagreeing at
16 all. And I don't think '60-'61 -- I think that
17 kind of confuses the picture, too.

18 So, take the chronic versus acute
19 out of it and, you know, certainly we still have
20 some questions, not necessarily problems, some
21 questions that we need to investigate before
22 we're settled on the coworker model itself.

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1 CHAIR BEACH: So, does that go back
2 to --

3 MR. FITZGERALD: So, I would say keep
4 3 sort of a coworker model.

5 CHAIR BEACH: Internal.

6 MR. FITZGERALD: Certainly NIOSH and
7 SC&A are getting more bioassay records.
8 They're going back to the site and I think we
9 would be able to report back to the Work Group
10 that we have converged and are in agreement, the
11 coworker model in terms of scope and design is
12 appropriate.

13 We'll look at the incident reports
14 and try to come up with some sense maybe from
15 the weeklies in '60-'61.

16 I'm not -- it's one of these
17 operational curiosities which I would hope just
18 turns out to be an anomaly, but I'd like to have
19 a better sense of why we see that spike and have
20 that operational information back to the Board.

21 DR. MAKHIJANI: This is Arjun. May
22 I ask Joe a question or assemble a group of

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1 questions?

2 CHAIR BEACH: Yes, please.

3 DR. MAKHIJANI: Thank you, Josie.

4 Is there a chronic versus acute
5 question for the periods for which we don't have
6 uranium -- just focusing on uranium -- for the
7 periods that we don't have uranium bioassay
8 data, or are we kind of deferring that to when
9 we have more complete information and we'll
10 revisit it?

11 MR. FITZGERALD: That's probably
12 addressed in the TBD-6000. You're talking
13 about the early periods?

14 DR. MAKHIJANI: Yes.

15 DR. MAURO: Arjun, this is John. I
16 looked -- I took a very close look at that. We
17 will be talking about that I guess a little
18 later.

19 DR. MAKHIJANI: Okay.

20 DR. MAURO: And certainly everyone
21 can make their own judgment whether or not that
22 is an issue.

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1 DR. MAKHIJANI: Okay.

2 DR. MAURO: But I'll present my case
3 at that time and the data and the rationale for
4 where I come out on the subject.

5 DR. MAKHIJANI: Thank you, John.

6 DR. NETON: This is Jim. I'm just
7 talking to my colleagues and Pat. Apparently
8 we do have access now to urinalysis samples in
9 the '50s, the early '50s, that those were
10 contained in their medical records.

11 So, again, I think we're going to
12 have to wait until the complete coworker model
13 is put together to maybe, you know, run these
14 issues to ground. And maybe the use of
15 TBD-6000 might not even be necessary if we have
16 enough early bioassay data.

17 CHAIR BEACH: Sure.

18 DR. MAURO: Jim, again this John.
19 That's great.

20 DR. NETON: Yes.

21 DR. MAURO: Because it allows us to
22 validate TBD-6000.

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1 DR. NETON: That's a good point.

2 Very good.

3 DR. MAURO: Okay.

4 CHAIR BEACH: Okay. Thank you,
5 John, Arjun.

6 Pat, I was waiting for you to jump
7 up and put that map up. Did you bring it?

8 MR. McCLOSKEY: I have plenty of
9 maps.

10 CHAIR BEACH: I figured you did.
11 You were looking for a spot to --

12 MR. McCLOSKEY: This one?

13 CHAIR BEACH: Yes. Anyway, I just
14 -- he was very helpful with these maps at our
15 Kansas City --

16 MR. McCLOSKEY: Are you comfortable
17 leaving it in that way?

18 CHAIR BEACH: Yes, I'm very
19 comfortable.

20 DR. NETON: I understand we're going
21 to leave Item 3 as a coworker model issue, but

22 --

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1 CHAIR BEACH: Yes.

2 DR. NETON: -- the acute versus
3 chronic we're going to morph that into a
4 coworker model.

5 MR. FITZGERALD: Right. And I think
6 that label somehow got carried over --

7 CHAIR BEACH: From the Site Profile.

8 MR. FITZGERALD: -- from the Site
9 Profile. I think this is more that issue.

10 CHAIR BEACH: Yes. Okay, great.
11 Is everybody else in agreement?

12 MR. KATZ: I just wonder if you want
13 to merge 2 and 3. Two and Three are both really
14 coworker modeling. I don't know if you --

15 CHAIR BEACH: Let's see. Well, 2 is
16 --

17 DR. NETON: I think it's a little
18 different as to who you're going to apply the
19 coworker model to.

20 CHAIR BEACH: Yes. So, before we
21 get into 4 -- well, 4 will be relatively quick
22 and then we'll look at a break time.

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1 MR. FITZGERALD: Yes, four, I mean,
2 having worked on the Y12, I remember that came
3 up very, very early five or six years ago. And
4 it was picked up in the Site Profile.

5 I hadn't worked on the Site Profile,
6 but it was picked up and we carried it over, but
7 with the understanding that unless there is
8 nothing new under the Sun, no new information
9 or revelation on, you know, Super S or, you
10 know, high-fired uranium, then we would defer
11 to our past positions and the, you know,
12 certainly how this issue has been disposed for
13 the other SECs and that -- conclude that the S,
14 you know, assigning the S solubility class was
15 appropriate.

16 And we did go back to Joyce who
17 always seems to have this institutional memory
18 and there is some ICRP standards activity in the
19 area, but it would not compromise using S as the
20 solubility class.

21 So, although that was flagged in the
22 Site Profile, we really don't see that as any

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1 issue for the Work Group at this point unless
2 there's any new information that would be, you
3 know, countering that. I haven't seen
4 anything.

5 MR. DARNELL: NIOSH is in complete
6 agreement. We should close this.

7 DR. MAKHIJANI: This is Arjun.
8 Could I ask a question of NIOSH and I am
9 wondering has NIOSH looked at the Gulf War
10 veterans' urinalysis data and whether it
11 matches the S, you know, the uranium
12 projectiles becoming ceramic, highly insoluble
13 at the high temperatures?

14 Somewhere vague in my memory there
15 is some -- there is some urinalysis data on
16 veterans not from the fragments lodged inside
17 their bodies and so on, but from inhalation of
18 high, you know, insoluble particles.

19 Does that match the type S or do we
20 know or --

21 DR. NETON: Arjun, this is Jim. I am
22 familiar with the analyses. I think Melissa

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1 McDiarmid at Johns Hopkins was doing that.

2 I don't know if there's sufficient
3 data to match an inhalation intake to the
4 urinary excretion. At this late juncture, you
5 really can't tell what you're measuring in the
6 urine as related to what's in a lung versus
7 what's systemic.

8 I think it would be very difficult
9 to do and the answer is we haven't looked at
10 that.

11 DR. MAKHIJANI: Right. I was just
12 wondering if there were any Super S indications
13 there because the very -- and the conditions may
14 or may not match, you know, what you find --

15 DR. NETON: Right.

16 DR. MAKHIJANI: -- in a nuclear
17 weapons complex. I'm just raising -- since Joe
18 said unless there is new information, I was
19 wondering whether the Gulf War experience might
20 provide new information or new insights.

21 DR. NETON: It may, but we haven't
22 looked at it. We've certainly scoured the

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1 literature for, you know, existing uranium
2 operations such as lathing uranium and there's
3 no indication that there is anything like Super
4 S from a --

5 DR. MAKHIJANI: Thanks, Jim.

6 DR. NETON: -- traditional
7 machining operation.

8 CHAIR BEACH: Okay. Thank you,
9 Arjun.

10 Any other comments on Three?
11 Everybody okay with -- or Four. Excuse me.
12 Four. Are we in agreement to close that issue?
13 Okay. So, we will call that closed.

14 MR. FITZGERALD: If you want to
15 squeeze Five in, we can do that, too.

16 CHAIR BEACH: Yes, let's go to Five,
17 too. Yes. Go ahead, Joe, on Five.

18 MR. FITZGERALD: Yes, on Five, again
19 this is not a new issue and it comes up with most
20 of the sites with uranium and we didn't see an
21 explicit treatment in dialogue since the Site
22 Profile.

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1 As we indicate here, certainly we
2 understand that this is woven in on TBD-6000 and
3 it is assumed in terms of time frame to be part
4 of the uranium dose reconstruction.

5 And with that presumption going
6 into the dose assessment, we don't have an
7 issue. I think it was more recognition. We
8 didn't see it explicitly, but I think since then
9 we've had a chance to be assured that and
10 pointed in the right direction.

11 So, we're fine that that in fact is
12 recorded in the TBD-6000 and elsewhere.

13 MR. DARNELL: NIOSH also agrees we
14 should close this.

15 CHAIR BEACH: So, NIOSH agrees that
16 it will be --

17 MR. FITZGERALD: Or is.

18 CHAIR BEACH: Is.

19 MR. FITZGERALD: It is addressed
20 already.

21 CHAIR BEACH: It is addressed.

22 MR. DARNELL: It is addressed.

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1 MEMBER CLAWSON: My question is, is
2 where is it addressed on TBD-6000?

3 CHAIR BEACH: Is that Section 2.3?

4 MR. McCLOSKEY: Yes, it's right
5 there in the response. Section 2.3.

6 MEMBER CLAWSON: Okay.

7 CHAIR BEACH: So, Work Group
8 Members, everybody agree we're okay with
9 closing recycled uranium? Okay. We will call
10 that closed.

11 I think this may be a longer
12 discussion. So, should we take a 10-minute
13 comfort break?

14 Okay. Let's do that. It's 11
15 minutes after 10:00. So, about 21 after.

16 (Whereupon, the above-entitled
17 matter went off the record at 10:11 a.m. and
18 resumed at 10:26 a.m.)

19 MR. KATZ: Okay. So, folks on the
20 phone, we're back from break and ready to go
21 again.

22 MS. BRACKETT: Okay, great.

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1 DR. NETON: I'm just going to make a
2 comment for the record as long as we're back.

3 On matrix issue Number 5 that talks
4 about recycled uranium, our response said that
5 Section 2.3 identifies '52 as the time that
6 recycled uranium was entered into the stream,
7 which is true.

8 But if you need to find the actual
9 way it's assigned, the doses and the nuclide
10 assignment, it's in Section 3.1 on Page 19.
11 So, it's in TBD-6000. How you deal with it is
12 covered in Section 3.1. I just want to make
13 that clarification.

14 CHAIR BEACH: And what was the
15 section?

16 DR. NETON: 3.1.

17 CHAIR BEACH: 3.1, Page 19.

18 DR. NETON: On Page 19.

19 CHAIR BEACH: All right.

20 DR. NETON: Specifically, I think
21 it's Table 3.2 is where the nuclide mix is
22 provided.

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1 CHAIR BEACH: Thank you. Thanks for
2 that clarification.

3 So, we're going to move on to issue
4 Number 6, DU after 1971 and during and after
5 1997.

6 MR. FITZGERALD: Yes, again this was
7 an issue of just trying to be clear, to
8 essentially verify that the scope, time and
9 handling was clearly identified and that there
10 weren't additional source terms for uranium.

11 Really, where we stand now is I
12 think we had a chance to look through the
13 classified records again. We've had a chance
14 to look at the DU operation, both the earlier
15 version and the later version and I don't sense
16 that we have any disagreement on the scope and
17 the time frame and the source term so much
18 there.

19 We do have some loose ends. One of
20 which is, I mean, we had an interview where
21 someone identified a DU application and I don't
22 think there's any disagreement we need to sort

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1 of chase that down a little bit to figure out
2 -- this was the use of DU, depleted uranium, as
3 a ballast in telemetry tests that were being
4 handled --

5 MR. DARNELL: We don't need to
6 discuss --

7 MR. FITZGERALD: Right.

8 MR. DARNELL: -- how it was used.

9 MR. FITZGERALD: Right. And so,
10 that's the question of whether it came from the
11 outside or whether it was fabricated at KCP or
12 not and I think we can chase that down.

13 The other thing I think we want to
14 do on this one is, now that we are aware of the
15 weekly activity reports, we identified that in
16 fact they maintained those, we're not sure
17 about the scope of them, but we're pursuing that
18 now, that has a fairly complete weekly
19 recording of incidents.

20 And I think what we want to do is be
21 able to review that body of reporting to see to
22 what extent the DU operations figured in

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1 incidents at the plant just to get some nature
2 -- sense of the exposure potential that was
3 going on and whether that would be encompassed
4 by the, you know, proposed approach on dose
5 assessment. I think it would probably be, but
6 we want to make sure and go through that.

7 So, in general, I guess and we were
8 part of this review and we did look at the
9 operation. Some question about dispersal. I
10 think you were talking about that earlier.
11 Some question about maybe additional source
12 terms and we want to look at the incident
13 database.

14 That seems to be a source of
15 information about what radiological activities
16 were ongoing. So, that would be another means
17 to, you know, verify that this is pretty much
18 it in terms of the source term for DU at the
19 site.

20 And I think that would, you know,
21 pretty much put us where we want to be.

22 MR. DARNELL: We did have one

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1 discussion with Nelson Beard about this, the DU
2 ballast. And he indicated that this was
3 fabricated offsite, sent onsite for use with
4 the instruction that -- or the assembly that the
5 KCP did.

6 MR. FITZGERALD: That was an offline
7 interview.

8 MR. DARNELL: Yes.

9 MR. FITZGERALD: Or discussion.

10 MR. McCLOSKEY: No. No, it wasn't
11 offline. It was during his --

12 MR. FITZGERALD: Okay, I didn't
13 catch that. Okay. Well, you know, I think
14 that was one question and, you know, how it was
15 handled --

16 MR. McCLOSKEY: Right.

17 MR. FITZGERALD: -- you know, I think
18 it was pretty clear. Without getting into any
19 details, it was a component that was used.

20 MR. DARNELL: It certainly fits the
21 overall story that we've been hearing. The
22 majority of the testing work that Kansas City

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1 did and the assembly work that Kansas City did,
2 the actual materials inside each of the units
3 were pretty much brought in from offsite and
4 assembled there.

5 Most of the machining work had to do
6 with other things. The tritium water work that
7 we'll be discussing later had to do with
8 something. They were more or less like a
9 contractor.

10 We obviously do need to nail down
11 this loose end, but it seems to be fitting an
12 overall picture.

13 MR. FITZGERALD: Right. And I think
14 this is the process. We're using different
15 sources of information. And I think we were
16 able to actually see these ballast pieces
17 showing up in the waste stream.

18 CHAIR BEACH: Right.

19 MR. FITZGERALD: It was in the waste
20 -- SWIMS. It was in the waste inventory. So,
21 you know, and we also picked up on some of these
22 other source terms in the -- just in that very

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1 brief look at the weeklies we picked up on
2 source term.

3 So, I think it will be a process of
4 just validating what was in the original Site
5 Profile in terms of DU for these time periods,
6 for these applications that, you know, this
7 pretty much is the picture of KCP historically
8 for DU.

9 And I thought we, you know, got
10 fairly far along and we still have a little ways
11 to go in terms of nailing that down. And some
12 of this is kind of, you know, a bit Site Profile
13 in nature. We're identifying source terms,
14 but I think it's helpful to make sure by looking
15 at the sources of information that, you know,
16 we haven't missed anything and it can be
17 accommodated by the dose assessment approach.

18 So, I really see this one as a -- of
19 an accounting for the time frame and the source
20 terms for DU and then sort of revalidating that
21 it's encompassed by the dose assessment
22 approach.

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1 And I think we've made some headway,
2 but we have a few loose ends.

3 MR. DARNELL: And you're
4 specifically speaking about the ballast, or all
5 of the DU work?

6 MR. FITZGERALD: I'm talking about
7 all DU work. The ballast being a small, very
8 small component of it, but just validating that
9 there is nothing else that comes to the fore in
10 looking at, for example, the weeklies.

11 If we can get a 10- or 20-year span
12 of weeklies, just, you know, sort of making sure
13 there's the time frames and the scope of the
14 activities all match up.

15 MR. DARNELL: So, you're looking for
16 information from the weeklies that validate
17 what we've already said.

18 MR. FITZGERALD: Yes, and that's
19 what this essentially is. It's just saying
20 that, you know, the Site Profile paints a
21 picture of a certain time frame, a certain
22 activity. With that activity change in '97, do

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1 we see anything that would change that picture
2 or not?

3 And so far, no, with that one bit of
4 an anomaly with the ballast coming to the fore.
5 But beyond that, nothing so far.

6 CHAIR BEACH: We haven't heard
7 anything back on those reports, have we?
8 Because I know we left her with looking at them.
9 She was going to try and put them on disk for
10 us.

11 MR. FITZGERALD: No, I have to check
12 back with Lynn, you know. There was an option
13 on the weeklies that they were going to see, you
14 know, exactly which ones they had for what
15 years. And to the extent they could -- I was
16 really hopeful they would be able to transfer
17 them to CDs and send them to us.

18 I think they would -- I told them
19 that would be good for them, too, not to have
20 to host us at the site again, but we haven't
21 heard back on the feasibility of transferring
22 all that. Depends on how much there is, I

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1 think.

2 MR. DARNELL: Right now the site is
3 actually pushing back to DOE because they feel
4 they're under scrutiny, under an audit. They
5 have a lot of misconception about what's going
6 on.

7 MR. FITZGERALD: So, your visit will
8 be important.

9 CHAIR BEACH: Yes.

10 MR. DARNELL: I'm thinking that it
11 will probably behoove us just to go back and
12 look for activity reports for two reasons.
13 One, so that we know that we've looked at them.
14 And the other is so that we know that we looked
15 at all we could find instead of relying on
16 somebody else to tell us this was --

17 MR. FITZGERALD: Well, we're going
18 to have to look at their holdings and, you know,
19 find out, you know, if it's all microfilm, where
20 it exists because I found the weeklies from 1964
21 tacked on the end of 200 pages of day-to-day
22 operational stuff. I mean, it was almost by

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1 happenstance I came upon them.

2 So, it's not clear -- what I
3 understand, it's not -- the microfilm is not
4 categorized, you know, in a routine way. It's
5 just everything is sort of lumped into a
6 microfilm and there's no way to know what's in
7 there, which is kind of scary, but, you know --

8 MR. McCLOSKEY: Anything on tritium?

9 MR. FITZGERALD: They have a
10 thousand rolls of microfilm and they don't have
11 it categorized or indexed by what's in that
12 microfilm. I can't imagine the time it will
13 take just to --

14 MR. DARNELL: You know, actually it
15 sounds like maybe we should just task ORAU with
16 sending a team down there to capture that data,
17 all of it, from the microfilms.

18 MR. FITZGERALD: No objections here.

19 (Laughter.)

20 MR. FITZGERALD: I mean, I sat
21 through one half of one year and it took me about
22 an hour to go -- and you can imagine 15, 20 pages

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1 of each and, you know, it's a lot to look at.

2 Even though it's very valuable
3 information, it's just that it's very tedious
4 to go through month to month. And I think, Pat,
5 you know, certainly can lead that team to do
6 that.

7 (Laughter.)

8 MR. DARNELL: But this just sounds
9 like something that's set for a subgroup to just
10 go and capture it all and --

11 MR. FITZGERALD: I think the
12 weeklies can be extremely valuable. I don't
13 know how many years. And I don't even know what
14 the organization is, and they didn't either.

15 They didn't really have any idea of
16 how the weeklies are organized or how many they
17 have. So, it was an open question when we left
18 the site and --

19 CHAIR BEACH: Well, we had asked for
20 the SWIMS reports, too, which you haven't heard
21 back on those, have you, Pat?

22 MR. McCLOSKEY: No.

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1 CHAIR BEACH: Okay.

2 MR. McCLOSKEY: Tara, the last I
3 heard, is still working on it. I think what we
4 identified in our last visit was -- we brought
5 some names of documents to ask for.

6 CHAIR BEACH: Yes, more specific.

7 And so, Pete, did you get your
8 question answered that you put in that you were
9 looking for more specific information for the
10 information missing from SC&A -- what SC&A has
11 described as what's missing in the --

12 MR. DARNELL: Yes. Yes.

13 CHAIR BEACH: So, that's -- we're
14 clear on that.

15 MR. DARNELL: I understand better
16 now.

17 CHAIR BEACH: Okay. So, the action
18 here is to move forward with --

19 MR. FITZGERALD: Well, I think we do
20 have a need to focus on these weeklies and find
21 a means to an end to get those organized and --

22 MR. DARNELL: Actually, I'd like to

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1 hear from the Working Group. Is it okay for us
2 to do --

3 CHAIR BEACH: That would be my next
4 -- yes.

5 MR. DARNELL: Task ORAU with going
6 out and getting the weeklies.

7 CHAIR BEACH: Absolutely. Yes.

8 MR. FITZGERALD: I work with Tara and
9 I think if it's more efficient to do it onsite
10 rather than have her continue to investigate,
11 then that's fine, too.

12 I think whatever gets us there most
13 efficiently --

14 CHAIR BEACH: Yes, I -- what do you
15 guys think?

16 (Chorus of yes.)

17 CHAIR BEACH: Yes, I agree also.

18 MR. DARNELL: All right. And that
19 will save our time, because what we're talking
20 about is a long and tedious job and we have a
21 group within ORAU that does that.

22 CHAIR BEACH: Yes, and it's pretty

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1 clear.

2 MR. DARNELL: And I feel sorry for
3 those folks.

4 CHAIR BEACH: Yes, it's pretty clear
5 what it is, weekly activities, yes.

6 MR. FITZGERALD: And it's maintained
7 in the -- well, as you know, in the classified
8 area. So, it's just difficult.

9 CHAIR BEACH: Okay. So, moving on
10 to Number 7, radioactive waste.

11 MR. FITZGERALD: Yes, this one I
12 think we've had a fair amount of discussion, but
13 on the radioactive waste we did see on the SRDB
14 and other places certain documentation where
15 Los Alamos was actually questioning the
16 condition of the drums they were receiving
17 because Bendix or Kansas City was shipping its
18 waste to Los Alamos, the rad waste, for
19 disposition and in some cases they were picking
20 up contamination and some leakage.

21 And so, we wanted to go back and
22 figure out if that was in fact a source of

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1 exposure at the site at Kansas City and whether
2 there was radionuclides involved that went
3 beyond depleted uranium, you know, to find out
4 whether or not you're talking about perhaps rad
5 waste source terms that would be downstream
6 from an activity we weren't aware of using the
7 waste management as a means to determine what
8 was being handled at the site.

9 And we didn't get too far on that.
10 I think we did interview a number of individuals
11 that painted a picture for us on how the drums
12 were handled, how they were filled, how they
13 were staged.

14 And we did see documentation as you
15 indicated earlier, Josie, that they shipped a
16 fair number. I mean, there was hundreds of
17 drums at some points, but a lesser number at
18 other points. So, it varied depending on I
19 guess the operations.

20 But where that kind of leaves us is
21 we do want to focus very much so in terms of the
22 SWIMS, looking at the inventory.

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1 I think that's a good source. That
2 gives you the characterization over time and
3 will answer a lot of questions about what
4 essentially was the rad constituent of the
5 wastes that were being shipped.

6 And the incident reports, the
7 weeklies, again, assuming that they are -- were
8 generated over time, would give us some
9 indication if any leakages involved rad
10 materials and how the site handled those
11 leakages.

12 So, I think we have some pretty good
13 sources of information that would give us the
14 kind of specific information we're looking for
15 relative to radiological exposures involving
16 the wastes that were handled.

17 I think what we gained from the last
18 onsite visit was a pretty good feel for how they
19 actually generated the waste, how it was
20 transferred to a holding area, I think what was
21 called a dump room.

22 CHAIR BEACH: Dump room, yes.

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1 MR. FITZGERALD: Sort of beginning
2 to frame up exactly what was going on at this
3 site.

4 And, again, I think as has been
5 pointed out before, the rad waste was a
6 constituent of the much broader waste
7 management that was going on at the site, but
8 it was --

9 MR. DARNELL: It's a very small
10 constituent.

11 MR. FITZGERALD: It was a small
12 constituent, but nonetheless it -- because it
13 was rad, we have the advantage of being able to,
14 I think, track it fairly carefully because the
15 site did.

16 So, I think we have the source of
17 information that we need to nail this one down.
18 I think it's a matter of just doing the research
19 a little bit more.

20 I think identifying the SWIMS, the
21 Solid Waste Information Management System that
22 was in place gives us a source of information

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1 which I think will be very useful.

2 It's a printout, essentially, of
3 the characterization of the waste. And most of
4 the DOE sites are very careful particularly
5 going into the '80s and '90s because of the
6 environmental regulations to be able to
7 identify what was in the waste.

8 That's a TBD, but I think it looks
9 promising that we're going to have, you know,
10 the information that we'll need to answer the
11 question.

12 MR. DARNELL: And it's really -- it
13 just boils down to looking at two more sets of
14 data, the SWIMS data and the weekly activity
15 reports.

16 CHAIR BEACH: Yes.

17 MR. FITZGERALD: I think those are
18 going to be the two primaries.

19 CHAIR BEACH: Yes.

20 MR. DARNELL: I think we can agree to
21 that one.

22 CHAIR BEACH: I agree. Part of that

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1 ORAU team, I know they're going to capture the
2 weekly activities. You're also going to have
3 them capture SWIMS data?

4 MR. DARNELL: We can add that.
5 Whatever --

6 CHAIR BEACH: I think we should.

7 MR. McCLOSKEY: We planned to
8 discuss things like that at lunch, but we could
9 discuss --

10 CHAIR BEACH: Okay.

11 MR. McCLOSKEY: But there's also the
12 urinalysis from the '50s.

13 MR. DARNELL: Right. Which is part
14 of the medical records. And that's actually
15 the only thing we've heard back from KCP about
16 so far is bioassay that is included in workers'
17 medical records.

18 And they're claiming it's going to
19 cost them \$70,000 to remove -- to get that data
20 for us and they are -- DOE, KCP are discussing
21 it right now.

22 CHAIR BEACH: Okay.

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1 MR. DARNELL: So, we may add all
2 three of those to the ORAU team that goes down,
3 but we're also looking at the possibility of
4 going back to the site for more data capture and
5 looking at SWIMS firsthand rather than -- the
6 SWIMS and the bioassay data firsthand rather
7 than just having it grabbed and then trying to
8 muck it out of the SRDB.

9 CHAIR BEACH: Right. Right. And
10 we can talk about that, too, like after your
11 lunch meeting.

12 One question I have is, in your
13 answer, you talked about utilizing models
14 developed and approved in the TBDs and
15 TBD-6000.

16 How does TBD-6000 work under this
17 case? Just a brief description on, for
18 radioactive waste.

19 I guess I was just surprised to see
20 that referenced and under this item.

21 MR. DARNELL: TBD-6000 looks at the
22 whole operational picture for work with

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1 depleted uranium, which includes handling --

2 CHAIR BEACH: Handling of the waste
3 also.

4 MR. DARNELL: Yes.

5 CHAIR BEACH: Okay. I guess I'm
6 more familiar with the models on the other end
7 of it, not on the waste end of it.

8 MR. DARNELL: Yes, it's just they
9 looked at uranium -- Jim, correct me if I'm
10 wrong, but they took a big-picture look at all
11 the uranium operations across the complex and
12 those that were similar which was the uranium
13 machining, and they came up with the bounding
14 estimates for the different types of materials,
15 the different forms, even, of radioactive
16 material that was machined and took the whole
17 process of the machining which was from birth
18 to waste to come up with a bounding dose
19 estimate; is that correct?

20 DR. NETON: Yes, I'd have to go back
21 and refresh my memory of exactly how waste is
22 handled in TBD-6000.

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1 DR. MAURO: This is John. I can help
2 out a bit.

3 DR. NETON: Yes.

4 DR. MAURO: It really is not. I beg
5 to differ.

6 DR. NETON: That's what I was
7 thinking.

8 DR. MAURO: I think it's important
9 that -- to look at TBD-6000 as its main concern
10 is the exposures while the workers were
11 machining.

12 And now, keep in mind that you could
13 also think in terms of after the machining is
14 done, you do have residuals. And then of
15 course we have OTIB-70.

16 However, the idea of a waste package
17 that is being, let's say, produced and handled
18 and I guess --

19 MR. DARNELL: That wasn't what I was
20 talking about.

21 DR. MAURO: Oh, okay. My mistake.

22 MR. DARNELL: That was to generating

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1 the waste and stopping there, not packaged,
2 handled and doing the shipping.

3 DR. MAURO: Yes.

4 MR. DARNELL: It's just the
5 operational end.

6 DR. MAURO: Just to help, TBD-6000 is
7 very specific. It goes to the different types
8 of uranium machining and handling operations.

9 It does -- I have to -- and it does
10 capture, maybe there might have been some
11 fires. It does capture the sweeping going on.
12 So, it's quite a good document in terms of
13 placing an umbrella over the people that
14 handled and worked with, you know, natural
15 uranium metal.

16 As far as a section on waste
17 management in TBD-6000, I don't think it's
18 there.

19 DR. NETON: There is a section on
20 scrap recovery.

21 DR. MAURO: Yes, absolutely.
22 That's part of the process.

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1 DR. NETON: Scrap recovery is part of
2 the process. And I'd have to look at that in
3 more detail to refresh my memory as to what is
4 included in scrap recovery, but I would assume
5 there's things like drumming operations and
6 things like that that would be involved in the
7 --

8 CHAIR BEACH: That kind of stuff --

9 DR. MAURO: Yes.

10 DR. NETON: If it's not there, I know
11 for a fact that we really, thoroughly examined
12 exposures during drumming operations.

13 John, if you remember with Hooker
14 Electrochemical --

15 DR. MAURO: Yes.

16 DR. NETON: -- that was a site that
17 was an SEC petition.

18 DR. MAURO: Yes.

19 DR. NETON: And we went through some
20 extensive analyses of exposures involved with
21 drumming, the drumming of uranium.

22 CHAIR BEACH: And when I look at

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1 waste, I look at it from the, you know, you go
2 back lines of inquiry. The spills, the leaks.
3 John mentioned sweeping. We also have reports
4 where they were using high-powered air to, you
5 know, sweep down floors and --

6 DR. NETON: Yes. See, I would say
7 that in general, though, that's going to be
8 covered in the coworker model. I mean, if
9 you've got bioassay data on these people and
10 they're either operators and they get the 95th
11 percentile, or they're moving -- they're doing
12 ancillary support operations which would be in
13 the 50th percentile with the distribution.

14 These would be workers that weren't
15 monitored. I mean, the monitored workers of
16 course have their own data. So, they would be
17 reconstructing in their own bioassay.

18 So, I don't know if you have real
19 bioassay data and a valid coworker model, then
20 I think these sort of things sort of take care
21 of themselves. You just have to put them in the
22 right part of the exposure model.

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1 CHAIR BEACH: Yes, and what years is
2 this going to cover, do we know, for waste we're
3 capturing?

4 DR. NETON: I don't know.

5 CHAIR BEACH: What do you think,
6 Pete?

7 MR. DARNELL: I'm not sure.

8 CHAIR BEACH: Because I see in '64
9 they shipped 122 drums and three sealed wooden
10 boxes as radioactive waste.

11 There was like three different
12 notices within the stuff that Joe found of
13 different waste that was shipped and to where.

14 So, I was just curious if we had --
15 because radioactive waste is always kind of not
16 -- it's kind of not really addressed. And I
17 think there might have been more waste here than
18 what we --

19 MR. McCLOSKEY: One of the reports
20 that I found was from 1963, you know. A Los
21 Alamos report where they had pictures of
22 leaking drums that arrived from Kansas City.

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1 So, I don't know what dates the --

2 CHAIR BEACH: Can I just take a look
3 at that? Is that on the SRDB, too?

4 MR. McCLOSKEY: It is.

5 CHAIR BEACH: I don't think I've seen
6 this one.

7 MR. McCLOSKEY: I don't have the SRDB
8 number in front of me at the moment.

9 MEMBER POSTON: But leaking drums on
10 delivery doesn't mean leaking drums in
11 storage.

12 CHAIR BEACH: In storage, yes.

13 MR. McCLOSKEY: The early years of
14 DOT weren't as rigorous --

15 CHAIR BEACH: Well, this is actually
16 -- it looks like it's coming off the drum off
17 the truck. At least in this picture, that's
18 what it looks like, but that might not be true.

19 MR. McCLOSKEY: I think that's the
20 picture taken inside the truck, Josie.

21 CHAIR BEACH: That's what I thought,
22 yes. It looks like it's before they even took

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1 it off the truck, they had problems.

2 MR. McCLOSKEY: And the premise was
3 that it occurred during transport, if I
4 remember correctly.

5 CHAIR BEACH: Okay.

6 MEMBER LOCKEY: In these types of
7 facilities, this is just for my education, how
8 did they handle the metal-working fluids?
9 What did they do with them?

10 CHAIR BEACH: The what?

11 MEMBER LOCKEY: Metal-working
12 fluids.

13 MR. DARNELL: It was collected in the
14 sump of the machine, and then transferred to
15 drums.

16 MEMBER LOCKEY: And then disposed
17 of?

18 MR. DARNELL: Eventually, yes, once
19 they had enough to make a buildup to have a full
20 container.

21 MEMBER LOCKEY: So, each machine had
22 their own collecting system, it wasn't a

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1 central --

2 MR. DARNELL: Each machine had their
3 own.

4 MEMBER LOCKEY: And then they
5 shipped it where? Where did it go?

6 MR. McCLOSKEY: Los Alamos.

7 CHAIR BEACH: Los Alamos.

8 MEMBER LOCKEY: Los Alamos. That's
9 where it goes, okay.

10 MR. McCLOSKEY: Initially there was
11 buried on site. And it was of a classified
12 nature and dug up during the '86-'87 D&D effort
13 by Rockwell and sent to Los Alamos at that time.

14 DR. MAKHIJANI: This is Arjun. I
15 have a question about that. Are there records
16 from the time that the waste was buried onsite
17 as to their contents?

18 MR. DARNELL: It was classified
19 waste. We wouldn't be allowed to discuss that.

20 DR. MAKHIJANI: Yes, but I mean --

21 CHAIR BEACH: The question is, do you
22 have it or not?

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1 DR. MAKHIJANI: You could always
2 make an --

3 MR. DARNELL: There was --

4 DR. MAKHIJANI: -- unclassified
5 search.

6 MR. DARNELL: Yes, we've -- they've
7 shown us records of some of their materials. I
8 don't know if it exactly included what was
9 buried in the trench, but we've seen some
10 records.

11 DR. MAKHIJANI: The point of my
12 question of course is not to go into the
13 classified area.

14 The point of my question is how sure
15 are we that DU and magnesium or thorium alloy
16 were the only materials, radioactive materials
17 in these waste drums, because from what was dug
18 up in 1987, there might be Los Alamos records
19 on the receiving end. I don't know if you've
20 contacted Los Alamos about the record at the
21 receiving ends and looked at the records at the
22 time these drums were buried.

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1 I think both of those would be
2 important confirmatory --

3 MR. DARNELL: Arjun, we're actually
4 positive that it is not just uranium, depleted
5 uranium and thorium alloys.

6 We know that there were sealed
7 sources used onsite that, over the lifetime,
8 got disposed of.

9 DR. MAKHIJANI: Right.

10 MR. DARNELL: There are some --

11 DR. MAKHIJANI: So, the question is
12 -- I'm sorry I interrupted. You hadn't
13 finished.

14 MR. DARNELL: Go ahead. Ask your
15 question.

16 DR. MAKHIJANI: So, my question
17 about that is, in the characterization of the
18 leak, you know, where the exposure potential
19 actually arises, internal exposure potential
20 might arise, is whether some of these sealed
21 sources and other radioactive materials were
22 present, do we know are these leaks

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1 characterized?

2 And so, how are we going to find out
3 what were the sources, radionuclides to which
4 there was exposure potential? So, that's sort
5 of the drift of my --

6 MR. DARNELL: I believe the only leak
7 that we really know of was the one that was
8 discovered in Los Alamos. I don't remember
9 seeing a radioactive leak, the record for a
10 radioactive leak at KCP.

11 We've seen records for all sorts of
12 chemical leaks at KCP, but not radioactive.
13 That doesn't mean there aren't any. It's just
14 we haven't found any yet.

15 DR. MAKHIJANI: I seem to recall that
16 Los Alamos complained about a radioactive leak.
17 And that shipping containers were actually
18 shipped in, you know, in not adequate condition
19 and that there was radioactivity, but this is
20 from some time back. So, I'm not really a
21 hundred percent.

22 MR. DARNELL: And I agree with you.

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1 We've seen things where Los Alamos had leakers
2 when they arrived, but what it appears is, is
3 that in transit the leaks occurred, not while
4 at the site.

5 We just haven't found a record for
6 something at the site yet, which is why we're
7 still looking.

8 MR. FITZGERALD: Yes, Arjun, I
9 think, you know, we're looking at both the front
10 end and the back end. We're looking at the
11 incident reports that were part of these weekly
12 reports hoping to see any indication that they
13 were dealing with leakages at KCP.

14 We're looking at the SWIMS
15 database, which is the inventory and
16 characterization of all the wastes that run out
17 of KCP to basically see what was in the drums
18 as measured at KCP.

19 But I think you bring up a good point
20 that beyond the memos sort of raising concerns
21 of leakages at Los Alamos, to make sure whether
22 or not in fact Los Alamos has any identification

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1 or characterization information that might
2 also be useful for identifying what was
3 leaking, for example.

4 I think we've seen in memos that
5 were complaining about the leakage, but we
6 haven't seen the actual whether there was any
7 measurements made and maybe any
8 characterization that was done.

9 So, you know, I think those -- that
10 would give us a front end and back end picture
11 of what was in the drums and to what extent the
12 leakages involved certain radiological
13 constituents.

14 DR. MAKHIJANI: Yes, because I, you
15 know, this is, again, I have not looked at these
16 documents recently. I looked at them when we
17 were doing the Site Profile review, but -- as
18 you know, I've become only recently reengaged
19 in the SEC review.

20 But I think -- I seem to recall more
21 than one occasion on which there was a complaint
22 and that Los Alamos was directly complaining

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1 about practices at the Kansas City Plant.

2 So, I think the back end -- so, maybe
3 you can discuss it at lunch whether you're going
4 to go to Los Alamos or what the determination
5 would be to figure out what the Los Alamos end
6 problem was with Kansas City.

7 MR. DARNELL: I think the thing that
8 we need to remember is we're going to be looking
9 for that data, Arjun.

10 CHAIR BEACH: Yes.

11 DR. MAKHIJANI: Yes, right. Yes,
12 sure.

13 MEMBER CLAWSON: Well and, Arjun,
14 this is Brad. Also, too, we found
15 documentation of they were using a private
16 contractor to transport these down to Los
17 Alamos. And the private contractor was upset
18 because they cut up his trailer into pieces
19 because of leakage.

20 So, we do know there were several
21 other ones through the process that were going
22 on with it. So, it's more than one, yes.

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1 MR. FITZGERALD: And I think it's
2 fair to say that the Los Alamos memos and
3 documents are to some extent driving this,
4 because it was their complaining about these
5 leakages which kind of has spurred our wanting
6 to look forward to see exactly what the
7 practices were at Kansas City, what the
8 experience may have been at Kansas City in
9 handling the waste and exactly what the
10 constituents were.

11 And we think it was DU, you know,
12 natural uranium and mag-thorium plus sealed
13 sources, but we want to certainly validate and
14 verify that by whatever characterization was
15 done both at Los Alamos and at Kansas City.

16 So, I think there's three avenues.
17 I think we identified the weekly activity
18 reports that will hopefully give us a good
19 picture week by week for a number of years.

20 The SWIMS, which is something that
21 I think Josie identified onsite which is
22 actually an inventory of characterized waste

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1 that was being managed at the site, which I
2 think is going to be very helpful.

3 And I think what you're raising is
4 maybe go a little further and see if Los Alamos
5 has any additional information or
6 characterization of -- since they were the
7 recipient of the waste, whether they did any
8 work to, you know, and some of this may be
9 classified, but to characterize what they were
10 receiving from Kansas City, but I think that
11 will certainly answer a lot of those issues.

12 DR. MAKHIJANI: Yes, Joe, they must
13 have had waste manifests, you know, in their
14 logs at Los Alamos.

15 MR. FITZGERALD: Yes.

16 (Simultaneous speaking.)

17 MR. FITZGERALD: We haven't
18 retrieved beyond the memos we were referring
19 to. So, certainly there's another avenue
20 there for characterizing what was being
21 handled.

22 DR. MAKHIJANI: Thanks.

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1 CHAIR BEACH: Okay. Thank you.
2 Before we leave this topic, Work Group Members,
3 any other suggestions, comments or thoughts for
4 Number 7?

5 MEMBER CLAWSON: No.

6 CHAIR BEACH: No, okay. So, those
7 action items are lined out pretty clear. Let's
8 move on to Eight, metal tritides.

9 DR. FITZGERALD: A familiar topic.

10 CHAIR BEACH: Yes.

11 DR. FITZGERALD: But I think
12 certainly a lot less contentious in this case.
13 I think, you know, we wanted to since neutron
14 generators were being handled, just to make
15 sure that the operating history was complete on
16 any instances.

17 Certainly the erbium tritide
18 leakage was pretty well documented and is
19 addressed in the ER.

20 We wanted to take the opportunity
21 just to look a little harder at that particular
22 issue.

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1 And really the only thing I would
2 say is left, we did talk to individuals and I
3 think we did establish that just because erbium
4 was the one that leaked, doesn't mean that was
5 the only constituent that was handled, but, you
6 know, we're talking about sealed sources.

7 So, we're not talking about a
8 situation similar to Mound or some other place
9 like Los Alamos.

10 There's were sealed sources. Your
11 exposure pathway would only exist if there was
12 a breach of the component.

13 We've only seen one. I think
14 actually you may have seen another incident.
15 You cite another one.

16 MR. DARNELL: Pat's got a record of
17 that.

18 MR. FITZGERALD: Right. So, there
19 might be two instances over the history of these
20 that might have represented breaches that led
21 to some release. Not necessarily exposure,
22 but release.

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1 MR. DARNELL: Do you want him to
2 discuss --

3 MR. FITZGERALD: Do you have the
4 second one? I know about the first one.

5 MR. McCLOSKEY: This was a recently
6 obtained document. And I believe Brent Nasca
7 referenced this second occurrence during his
8 interview last month. And I don't have much
9 else to say about it.

10 MR. FITZGERALD: Okay.

11 CHAIR BEACH: So, there was two
12 incidents then.

13 MR. DARNELL: No data on it?

14 MR. McCLOSKEY: Yes, we have this
15 report here. So, radioactive contamination in
16 excess of limits established by DOE order
17 5480.11 was discovered on classified
18 components sent by Pantex to Kansas City Plant.

19 And it's another, I believe -- well,
20 I'd want to review it further. I just printed
21 this before we came to this meeting.

22 MR. DARNELL: Is it in the SRDB yet?

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1 MR. McCLOSKEY: Well, yes, it should
2 be.

3 CHAIR BEACH: Can you make that
4 available so that it can be sent out to the rest
5 of the Work Group?

6 MR. McCLOSKEY: Absolutely.

7 CHAIR BEACH: Okay. Send it to Ted,
8 at least. So, then we're talking about two
9 specific incidents at this point.

10 MR. McCLOSKEY: Yes, it was just
11 because Brent brought this up a few weeks ago
12 that I went looking again with our --

13 CHAIR BEACH: Excellent.

14 MR. FITZGERALD: You know, again
15 this would probably be very much the exception
16 given the fact they're sealed components, but
17 just to have a better understanding of --

18 MR. DARNELL: One positive is that
19 KCP was checking when they received this
20 material.

21 CHAIR BEACH: And then it looks like
22 the second part of your response actually

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1 belongs on One; is that correct?

2 MR. McCLOSKEY: That's right.

3 CHAIR BEACH: Okay.

4 MR. FITZGERALD: So, I would say the
5 only thing left on this one is that I would want
6 to look at those weekly activities assuming
7 that that might be a way to see if there's any
8 other instances.

9 Again, even if there were, I'm not
10 sure -- and I want to reserve judgment, but I'm
11 not sure this will, you know, be a SEC issue,
12 but one that I think just to have a complete
13 picture for the Board before we let it go, will
14 be useful.

15 MR. DARNELL: I don't disagree.
16 It's something that we need to bend the last
17 nail down on.

18 CHAIR BEACH: Okay. Go ahead,
19 Arjun.

20 DR. MAKHIJANI: Sorry, Josie.

21 CHAIR BEACH: No, no, that's okay.

22 DR. MAKHIJANI: Joe, I understand

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1 you're saying this may not be an SEC issue or
2 this is not an --

3 MR. FITZGERALD: If in fact it turns
4 out that we have two instances or maybe, you
5 know, maybe that's confined to two instances
6 and contamination was detected, but there was
7 no exposure, for example, then, you know, again
8 it was an isolated event that for which there
9 was no exposure.

10 They were doing contamination
11 surveys of all the generators that were being
12 processed, but that was being done under
13 controlled conditions. So, I think that would
14 be the avenue we'd have to look at.

15 DR. MAKHIJANI: Okay, thanks.

16 CHAIR BEACH: Okay. Anybody else on
17 metal tritides? Comments?

18 MEMBER CLAWSON: No.

19 CHAIR BEACH: All right. So, that
20 one is going to stay open. We are looking at
21 weekly activity reports and we'll get to the
22 second part of this comment in Item 20.

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1 So, Number 9 brings us to external
2 coworker dose.

3 MR. FITZGERALD: Yes, that was a
4 carryover from the Site Profile. And this is
5 one that Ron looked at in some detail. It's
6 sort of a two-part issue.

7 One was some concerns again over the
8 validation and verification of the data and how
9 they transferred the electronic database.
10 That was covered in Issue 1 and there was
11 certainly a legibility question as well. So,
12 this is a bit of a duplicate from that more
13 generic issue.

14 And as NIOSH noted, the legibility
15 issue has gone away. We still have that open
16 issue from before about the transfer. So, this
17 was already covered previously.

18 MR. DARNELL: Yes, I suggest we close
19 Nine and --

20 MR. FITZGERALD: Well, there's --

21 MR. DARNELL: Since we have Issue 1.

22 MR. FITZGERALD: There's still --

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1 yeah, well, I think that's true on the first
2 part of this, but we're still --

3 CHAIR BEACH: Part A, and we still
4 have B.

5 MR. FITZGERALD: Yes. We're still
6 waiting on, I think, Brent Nasca had agreed, and
7 this was with Ron's discussion with him that '69
8 is still a question mark. That he was going to
9 go ahead and contact us in terms of why the
10 records seem to be zero for that time period.

11 So, we have a loose end there. I
12 don't think we have a broad question or issue,
13 but certainly from the standpoint of getting
14 some feedback from him on the external doses for
15 '69, it just seems anomalous and he had no
16 explanation at the time.

17 CHAIR BEACH: Yes. So, I think
18 those both fall under waiting for --

19 MR. FITZGERALD: I just, you know,
20 the big picture is I don't think we have a
21 fundamental issue, but we want to get that
22 clarification from Nasca on '69 before we let

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1 that one go, from the Board's standpoint.

2 CHAIR BEACH: Okay.

3 MR. DARNELL: I wonder if they didn't
4 do any operations in '69.

5 MR. FITZGERALD: Well, he didn't
6 have an answer at the time and it's sort of like,
7 you know, we did ones like this and, you know,
8 we're at the very early stages of doing the
9 research. So, I think we'll get an answer and
10 that will take care of it.

11 MR. McCLOSKEY: During the writing
12 of the ER because of a comment from Jim, we did
13 email back and forth to Brent Nasca about this,
14 the lack of records for that year.

15 And he did say that he didn't see
16 anything unusual, but he's not a dosimetrist.
17 So, we asked him this once before. So, I don't
18 think it hurts to have him look again.

19 MR. FITZGERALD: Just to cross the T.
20 Again, I don't know if it -- I don't think it's
21 going to undercut the bigger question, but it's
22 an obvious question.

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1 CHAIR BEACH: Right. We'll just
2 finish it before we end up closing it.

3 Okay. Ten, non-penetrating dose.
4 This was another one of Ron's that you have.

5 MR. FITZGERALD: Yes. And
6 unfortunately Ron couldn't be here. These are
7 two issues and he has become -- this has sort
8 of become a cottage industry looking at some of
9 these external issues on neutron/photon ratios
10 and the non-penetrating.

11 I thought it best just to give you
12 his take on the specific questions that remain
13 based on your response, Pete and Pat, on this
14 particular item.

15 So, I gave -- you were forwarded
16 pretty much his -- here's the loose ends from
17 those two issues that, quite apart from your
18 response, that he would like to see as far as
19 additional input.

20 MR. DARNELL: And unfortunately I
21 wasn't part of KCP when this was being
22 developed. So, I don't have an answer.

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1 MR. McCLOSKEY: I think Matt Smith is
2 available to discuss this.

3 MR. SMITH: Yes. Hi, this is Matt
4 Smith with the ORAU team. Yes, just looking at
5 the film badge results to answer Ron's
6 question, it would be the value that they had
7 in the rem column represents what we would
8 usually call open-window plus shielded.

9 So, if we subtract out what they
10 have in what they are calling the roentgen
11 column, that's representing from what I can
12 tell the shielded quantity. And so, the
13 remaining quantity is the rads, which would be
14 what we would call a shallow dose or open-window
15 dose.

16 I will say that, yes, it's a
17 different kind of way of displaying things
18 compared to some other sites, but luckily the
19 film badge registers have the gross density,
20 the net density for open and -- open-window and
21 shielded. And you can see how they correlate
22 with the rad being open-window, roentgen being

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1 shielded and rem being a total of the two.

2 MR. FITZGERALD: You know, I think
3 it's not so much we have a problem with the
4 outcome. It's just the details are missing in
5 terms of I think what you are getting to which
6 was the approach that you were actually taking
7 to come up with the dose estimates.

8 And I think the way -- I'll propose
9 this to the Work Group. If you all can provide
10 a written response maybe and walk the Work Group
11 through the -- what I think he was just talking
12 about was how the non-penetrating dose was
13 estimated and with the framework that was
14 provided, the rad/rem, the actual database,
15 that would be very helpful.

16 I think it was hard going through
17 those details. And I'm not saying we
18 necessarily would have a problem, but we can't
19 follow it right now. And I think that was the
20 thrust of what Ron was pointing out.

21 I don't want to speak for him
22 because he did spend a lot of time on this data.

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1 So, I'd rather, you know, have him see something
2 in writing if that's possible.

3 MR. DARNELL: Would it be okay with
4 the Board if Matt Smith and Ron Buchanan got
5 together and talked about it?

6 CHAIR BEACH: Technical call, yes.

7 MR. FITZGERALD: That would be fine,
8 yes.

9 CHAIR BEACH: Yes.

10 MR. DARNELL: Matt, would you mind
11 doing that, getting together with Ron?

12 MR. SMITH: No, not a problem at all.

13 MR. DARNELL: Okay.

14 DR. MAKHIJANI: This is Arjun. Just
15 a clarification on that last point. Normally
16 when NIOSH ORAU talk with SC&A, there's a memo
17 of conversation.

18 CHAIR BEACH: Yes, we'll do it that
19 way. Yes, it will be a regular tech call.

20 DR. MAKHIJANI: Okay.

21 MR. FITZGERALD: And then there will
22 be a report back in certainly next session.

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1 MR. DARNELL: Right. And NIOSH will
2 be involved with it, too. So, it will be NIOSH
3 ORAU, SC&A discussing and any Board Member that
4 would want to be --

5 (Simultaneous speaking.)

6 MR. KATZ: I can make sure that gets
7 circulated.

8 DR. MAKHIJANI: And then my question
9 relates to this, NIOSH is satisfied that
10 maximally exposed work group and work scenario
11 are represented.

12 So, this goes back to the earlier
13 placing workers in the locations and so on.
14 And I wonder how this particular statement
15 correlates with the questions about being able
16 to place workers.

17 CHAIR BEACH: Yes, that's a --

18 DR. MAKHIJANI: And how we're
19 satisfied that maximum, you know, how we
20 determined that the maximum -- who is the
21 maximally exposed work group.

22 MR. McCLOSKEY: Well, I think we

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1 simply said that since there were approximately
2 5,000 records of non-penetrating doses during
3 the time period in question, that we would
4 assume that the maximally exposed work group
5 and work scenario would have been represented
6 in there.

7 DR. MAKHIJANI: Yes, that's not been
8 a very good indicator in some situations, at
9 least. Because in the past, for instance, you
10 know, health physics personnel are
11 over-represented and workers who may have had
12 more exposure potential were under-represented
13 or not represented, you know.

14 So, not necessarily in relation to
15 external dose, but in relation to beta dose it
16 might be a very important thing to look at and
17 I think an assumption certainly would leave me
18 pretty uncomfortable.

19 MR. DARNELL: That is one thing that
20 we're looking for is who is making up the group
21 that we're basing our decisions on, Arjun.

22 We're not simply looking at it as,

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1 you know, just everybody. We're looking at
2 what work group, where did they come from.

3 You've got to remember this is not
4 really a traditional site in the sense that you
5 would have a lot of health physics people
6 surrounding a radioactive work job. These
7 were more environmental safety and health techs
8 who came in, checked and left and that's how
9 more this site operated.

10 So, but we are keeping a mindful eye
11 on what your concern is as just
12 over-representing with HPs and other types of
13 folks that weren't actually doing the work.

14 DR. MAKHIJANI: Yes, I mean, I
15 represent -- I've stated about
16 over-represented HPs because that's, you know,
17 when we looked at in detail at Nevada Test Site,
18 that's what it turned out to be.

19 And I think I have the impression
20 just from memory that it's also the case at some
21 other sites and I realize that Kansas City is
22 different. So, some kind of demonstration

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1 that the maximally exposed group is
2 represented.

3 DR. NETON: Arjun, I think the HPs
4 were more over-represented in internal dose at
5 the Nevada Test Site, if I'm not --

6 DR. MAKHIJANI: Yes. No, no, you're
7 right.

8 DR. NETON: I think external --
9 (Simultaneous speaking.)

10 DR. MAKHIJANI: But I just want to
11 make a caution that we can't have an assumption
12 about that.

13 DR. NETON: You make a valid comment.

14 DR. MAKHIJANI: Thanks, Jim.

15 MR. DARNELL: We are definitely
16 keeping it in mind.

17 So, Matt, when we get ready to do
18 that call, we'll do it as a conference call so
19 that all of the people can be involved that want
20 to be involved in the call.

21 If you can send me some times of your
22 availability, we'll get something set up.

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1 MR. SMITH: Okay. We'll do that.

2 MR. DARNELL: Thank you.

3 CHAIR BEACH: And Ron is gone for a
4 week. So, I think he's on vacation through the
5 week.

6 MR. FITZGERALD: Right.

7 MR. DARNELL: Okay. So, we're
8 looking at the first week of July for the
9 earliest time frame.

10 MR. FITZGERALD: Probably.

11 CHAIR BEACH: Which would be holiday
12 week. So, maybe the second week.

13 (Simultaneous speaking.)

14 CHAIR BEACH: You'll figure it out
15 and let us know, I'm sure.

16 Okay. So, any other items for 10,
17 Work Group Members? I think when I was just
18 talking to Joe, we're going to try to go through
19 11 and 12. Those are Ron's issues.

20 And then give the Petitioners a few
21 minutes to speak before we break for lunch at
22 least about this first part of the day.

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1 MR. FITZGERALD: Yes, and I think
2 that's a good way. Ten is a clarification
3 issue. I think that's a good way to dispose of
4 that.

5 CHAIR BEACH: So, 11 is N/P ratios.

6 MR. FITZGERALD: I think 11 is very
7 similar likewise, you know, neutron-photon
8 ratio. Again, questions about how it's being
9 applied rather than whether it's valid or not.

10 And I think the questions were this
11 application of N/P value of 1. And I think you
12 provided a response of how that was being done,
13 how it was being applied.

14 And I think what Ron was clarifying
15 was if it were based on information outside KCP,
16 not KCP records themselves, it probably is
17 certainly a claimant-favorable value, but he
18 had some questions as to whether or not it was
19 in fact derived from outside.

20 MR. DARNELL: And again I'm going to
21 have to defer to Matt or one of the other ORAU
22 team members on that one.

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1 MR. SMITH: Sure. The value of one
2 that's in the TBD is in fact based on KCP data.

3 The number of positive neutron
4 measurements is actually very small and they
5 mostly occur in what we would call the post-NTA
6 dosimetry era.

7 So, the authors of the TBD at the
8 time took a look at that and made a
9 claimant-favorable assumption based on what
10 they were seeing in that typically the neutron
11 values were less than the gamma.

12 In some cases it was a neutron-only
13 measurement. In other words, the gamma was
14 shielded out by whatever components or
15 processes were going on.

16 And they came to a determination
17 that a 1:1 ratio would certainly bound any
18 neutron exposure condition.

19 And, again, the sources that were in
20 use span the era from NTA up through modern
21 dosimetry. Those sources mainly being the 14
22 MeV neutron generator and then there's a

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1 plutonium-beryllium source.

2 So, when they took a look at that
3 even back when the TBD was first put together,
4 they were basing it off really the results they
5 were seeing in a more modern era.

6 We can, you know, go through that
7 database again and --

8 DR. NETON: This is Jim --

9 MR. SMITH: -- talk about it as
10 needed.

11 DR. NETON: This citation of TIB-24
12 is that the N/P -- the neutron-photon ratios for
13 alpha n reactions in natural uranium and
14 thorium metal, which is three percent of the
15 weight of the material.

16 I don't think there's any neutron
17 dose coming off of that material. So, you
18 know, I think it's these other --

19 MR. SMITH: I think that I got it in
20 the mix somewhere along the line on the response
21 process.

22 DR. NETON: Right.

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1 MR. SMITH: I didn't see any evidence
2 of uranium work.

3 DR. NETON: There was no enriched
4 uranium work, was there, at this facility?

5 MR. DARNELL: No.

6 DR. NETON: So, the potential for
7 neutron exposures from the source term material
8 is nil. So, any exposure that they're
9 monitoring with these NTA film had to be these
10 neutron generators or -- which I don't know if
11 a 1:1 ratio is appropriate.

12 So, I think we need to do a little
13 more work on that to --

14 MR. FITZGERALD: Yes, we didn't see
15 a basis in OTIB-24 either.

16 DR. NETON: No. I mean, 24 is --
17 well, it covers enriched uranium. There's,
18 you know, there's theoretically, you know, you
19 can get alpha n reactions off of natural, but
20 it's just so small. It's not worth, you know,
21 in my opinion.

22 So, I think we need to do -- in my

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1 opinion, we need to do a little more work here
2 and flesh out the potential neutron sources
3 that were actually what was being measured by
4 this NTA film. And I don't think the TIB-24
5 response adequately addresses the issue. So,
6 I think we need to go back and look at that.

7 CHAIR BEACH: Okay. So, what would
8 that --

9 DR. NETON: I think we need to revise
10 our response to address the source term that was
11 being measured by the NTA film other than
12 natural uranium, three percent thorium metal.

13 MR. DARNELL: Matt, just to let you
14 know, I'm going to get a G2K together for this
15 for your support of the -- for your support
16 after this Working Group meeting and ongoing
17 with KCP so that we cover all those bases.

18 Is that all right with you?

19 MR. SMITH: That sounds good to me.

20 MR. DARNELL: Thank you.

21 CHAIR BEACH: Add it to the pile.

22 MR. DARNELL: Sorry to have to do

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1 that, but --

2 MR. FITZGERALD: Okay. So, I guess

3 --

4 CHAIR BEACH: Move on to 12?

5 MR. FITZGERALD: Well, certainly --

6 CHAIR BEACH: Oh, I'm sorry.

7 MR. FITZGERALD: -- we'll wait and
8 see what the analyses are. I think we're in
9 agreement on that.

10 CHAIR BEACH: Yes, okay. So, we'll
11 wait for that new, revised response from --

12 MR. FITZGERALD: This is 12?

13 CHAIR BEACH: Yes. And our next one
14 is fading of NTA.

15 MR. FITZGERALD: Yes, I think in 12
16 looking at the response, I mean, just to
17 clarify, is this a change of position that
18 you're not going to use NTA at all, or is this
19 something that we just didn't pick up and
20 review?

21 Because this suggests that a
22 correction factor could be developed which I've

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1 seen in other sites, but you're not going to use
2 any of the NTA-era data it seems in this
3 response.

4 MR. DARNELL: Well, I would think
5 most of the --

6 MR. FITZGERALD: You would
7 back-extrapolate, you know, if you had to.

8 MR. DARNELL: Most of the data we
9 have is post-NTA --

10 MR. FITZGERALD: Right.

11 MR. DARNELL: -- era.

12 MR. FITZGERALD: So, whatever data
13 you happen to have, you're not going to use. So
14 this issue would not be relevant.

15 MR. DARNELL: Right.

16 MR. FITZGERALD: And you would apply
17 what you've collected later if there was any
18 instances --

19 MR. DARNELL: To previous.

20 MR. FITZGERALD: To previous. And
21 that the activities or operations can be
22 normalized for those few instances before the

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1 -- during the NTA era.

2 I mean, that's the -- that would be
3 the only proviso. You could back-extrapolate
4 it and in fact the sources were, you know,
5 generally the same.

6 MR. DARNELL: That's my
7 understanding.

8 MR. McCLOSKEY: That is true, Joe.

9 CHAIR BEACH: So, it sounds like this
10 may be under the same, needing a new response
11 or --

12 MR. DARNELL: No, that's what our
13 response is. It's --

14 MR. McCLOSKEY: We're not going to
15 use the --

16 MR. FITZGERALD: Well, that's what I
17 was kind of trying to clarify. Was that a
18 change in what was -- I'm trying to remember if
19 the ER actually made that particular point or
20 you're saying now that you're not going to use
21 whatever data was in the NTA era making the
22 question fading of NTA sort of irrelevant.

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1 MR. McCLOSKEY: I don't know that in
2 the ER we did specify that we were going to use
3 NTA data.

4 MR. FITZGERALD: Or maybe it's just
5 silent on the question.

6 MR. McCLOSKEY: Yes, maybe.

7 MR. DARNELL: Yes, it's silent.

8 MR. FITZGERALD: Okay. So, this --
9 you're just clarifying you're not going to use
10 it and you're going to back-extrapolate if
11 necessary. And you're assuming operations are
12 normalized.

13 I'm just trying to figure out where
14 we are on this.

15 DR. NETON: I think we need to
16 revisit this one.

17 CHAIR BEACH: Yes.

18 DR. NETON: It's sort of combined
19 with the first response, I think. We don't
20 really know what the source terms were right
21 now. We haven't identified what we're
22 reconstructing.

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1 I mean, if there was these 14 MeV
2 neutron generators and the fact that they're
3 reading zero, to me, is not really
4 justification.

5 It's not going to include fading,
6 because they couldn't fade it to zero, right?
7 I think let's just lump these two together and
8 we'll -- I don't quite understand how this was
9 all working. I hadn't looked at this until
10 fairly recently.

11 CHAIR BEACH: Okay. That's fair
12 enough.

13 DR. NETON: We'll reserve both these
14 neutron issues until at least I can understand
15 it.

16 CHAIR BEACH: Okay. So, we're more
17 than halfway through with the matrix. 11:23.
18 So, Petitioners, if you'd like to make a
19 comment, I'm going to ask that you try to bring
20 up topics related to the first -- to what we've
21 discussed this morning.

22 If you have clarification or

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1 questions or something that you can add, that
2 would be helpful. And then I'll give you some
3 more time for the second half of the issues
4 after lunch.

5 Maurice, are you --

6 MR. KATZ: And, Charles, do you need
7 them to come forward, or are you okay?

8 THE COURT REPORTER: To the extent
9 that they have substantive comments, it would
10 be helpful.

11 MR. KATZ: So, if you would just
12 belly up to the table so it would be easier for
13 Charles to cover what you say, thank you.

14 MR. COPELAND: Okay. I'm going to
15 skip to the second part, the second question.

16 CHAIR BEACH: That's coworker.

17 MR. COPELAND: Yes.

18 CHAIR BEACH: Yes.

19 MR. COPELAND: Seems that I'm
20 hearing that the information that we're getting
21 in the interviews are the differences and the
22 generation of differences.

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1 I see that someone said that there
2 was strict restrictions on people moving
3 around. That's totally not true.

4 I was a union official. I was a
5 union official and also a human rights
6 committee member.

7 CHAIR BEACH: Maurice, can I ask you
8 the time frame you're speaking to? That would
9 be helpful.

10 MR. COPELAND: The time frame that
11 I'm specifically talking about now, I hired in
12 in 1968. From 1968 to 1973, the plant went from
13 2,000 people to 9,000 people.

14 You have a machining capacity of 300
15 machines, 300 people, but you got, I mean, a
16 hundred machines and 300 people. You can't put
17 300 people on a hundred machines. So, those
18 people were loaned out. Those people were
19 loaned out anywhere we needed them during the
20 Cold War to get the job done.

21 We were in a high-production mode at
22 that time. I myself was loaned out to the

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1 barrel lot, waste management. I worked in
2 building service -- building and grounds during
3 some of those time periods.

4 Some people -- and I want you all to
5 understand this and I don't want to take
6 anything from those people because they
7 trained, they were trained as machinists.

8 The machinist period or training
9 period was like six to nine months, okay. Then
10 they were assigned to Department 95, 93, 45,
11 wherever.

12 Some of those people never ran a
13 machine a day in their life while they worked
14 for Bendix.

15 We got laid off in 1973. Those
16 people were loaned out to do anything and
17 everything, whatever needed to be done.

18 So, when you fix a coworker for
19 those people, I really would like to know who
20 they are. That was between 1968 to 1973. We
21 had a layoff and the plant laid back off down
22 to 3,000 people. In 1978, the plant went up to

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1 9,000 people. Therefore, you have that again.

2 Now, when you're fixing your
3 co-models, when you fix your whoever that
4 person is, the model person, you don't know -
5 there's nowhere scientifically that anybody in
6 here or anyone in your system can say what a
7 person did out at that plant at any given time.

8 I don't care what -- I don't care
9 what classification that they had in the
10 factory because we moved people around.

11 Not only that, those departments
12 moved around. Department 45 was not where
13 Department 45 was when you went out there.

14 The day that you walked into that
15 plant and you saw that plant, that plant changed
16 drastically between 2000 and today. That
17 plant did not look like that.

18 The walls did not extend that high.
19 That plant was wide open. You could reach it.
20 You could throw a brick from one end of that
21 plant to the other end and not have it hit
22 anything.

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1 CHAIR BEACH: So, you're talking
2 about the earlier time period it was open.

3 MR. COPELAND: I'm talking about
4 that plant was open all the way up until the
5 1990s.

6 CHAIR BEACH: Okay. Thank you.

7 MR. COPELAND: Okay. One more thing
8 and it's something on Two. The restriction,
9 yes, the restriction with the -- whoever this
10 was from the union that says that they had --
11 the union had strict knowledge on people moving
12 around, well, that wasn't really implemented
13 until the '90s, the '90s.

14 The union didn't care where those
15 people were as long as we got the job done.
16 That's what it's all about is to get the
17 production out, get the parts out, get the stuff
18 moved to wherever.

19 So, whoever that was if they came --
20 if they were giving you that information and
21 they were a 20-year employee, you have to
22 understand that person only has been working

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1 there from 1990 -- I mean from the late '80s.
2 He don't know what went on back in the '60s. He
3 doesn't know what went on in the '70s. He
4 doesn't know what went on in the '80s. He's
5 coming in under rules that did not work that
6 way.

7 I was a clerk when I was in the Army.
8 I wasn't a clerk in Vietnam, but my time in the
9 Army is going to be judged on my MOS, but they
10 don't know what I did in Vietnam. They don't
11 know what actually happened, what I was
12 actually doing, but they go by my job title.

13 I don't think that's -- that's not
14 the way it works. I was not a clerk. Same
15 thing with Bendix. So, I'll leave that for
16 Number 2.

17 CHAIR BEACH: Okay. Anything else?

18 MR. COPELAND: Yes.

19 CHAIR BEACH: Go ahead.

20 DR. MAKHIJANI: Could I ask a
21 question of the person who just spoke?

22 CHAIR BEACH: Yes, that is Maurice,

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1 Arjun.

2 DR. MAKHIJANI: Maurice, excuse me.
3 Could I ask a question of you, if you don't mind?

4 MR. COPELAND: No.

5 DR. MAKHIJANI: Now, during this
6 period until the 1990s, the people were moving
7 around and got the job done independent of where
8 in the plant it was or what the job was.

9 When people moved around, did they
10 get badges or turn in badges depending on where
11 they worked like this week or the next week?

12 Do you remember? Could you
13 describe the badging practices about who wore
14 them and who did not or whether we could find
15 documentation about that?

16 MR. COPELAND: Are you talking about
17 dosimeter --

18 CHAIR BEACH: Dosimeter badges.

19 DR. MAKHIJANI: Yes, dosimeter
20 badges.

21 MR. COPELAND: No, I never wore a
22 dosimeter badge and I worked in -- I was one of

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1 the people -- I was going to get to that, but
2 I ran those uranium billets in Department 20 and
3 in that special little room that people were
4 talking about.

5 And I ran it on -- I gave you all the
6 number or the name of the machines that I ran.
7 The center drive, the bullets. I ran those. I
8 ran that and I never knew until 2013 -- they
9 never told me until 2013.

10 So, I mean, no, I never wore a
11 dosimeter badge at all and I filled in for --
12 I gave you the name of the guy - [identifying
13 information redacted] in Department 20. That
14 was his job. I filled in for him and
15 [identifying information redacted]. There
16 was a guy named [identifying information
17 redacted] in the model shop. I'm the one who
18 ran that equipment.

19 When they were cleaning the
20 equipment up, so to speak, up until the 1980s,
21 I was running that equipment every day prior to
22 the cleanup.

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1 I never was monitored. I never did
2 a urinalysis. And that's just the way it
3 works.

4 CHAIR BEACH: What year was that,
5 Maurice?

6 MR. COPELAND: When I worked in
7 Department 20?

8 CHAIR BEACH: Yes, when you said --

9 MR. COPELAND: I worked in
10 Department 20 off and on up until -- up until
11 -- it was in the '80s or late '80s, because I
12 was a -- you understand? I was an apprentice.
13 I'd like to see the model for an apprentice, the
14 coworker model for an apprentice.

15 Evidently NIOSH or anybody else
16 that's doing this stuff doesn't know what
17 people do and what an apprentice does.

18 An apprentice carries about 12
19 different classifications during his
20 apprenticeship, okay.

21 We work with the engine process. I
22 was a process engineer. I worked in

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1 metallurgy. I worked with [identifying
2 information redacted] with the centrifuges. I
3 was an electrician, pipefitter, all of that.
4 That's what you do. That's what an
5 apprenticeship is and you do -- talking
6 thousands of hours.

7 So, it's kind of difficult for me to
8 see who's going to match me or who they're going
9 to match me up, when and what time in all the
10 skilled trades.

11 The pipefitters, the same thing.
12 Everybody does that. That's what you do to be
13 a master at your trade.

14 Senator McCain just said something.
15 You do not fight a war like that. You don't know
16 how we fought the war. You don't know how we
17 got the job done.

18 I hope I answered his question.

19 DR. MAKHIJANI: Yes, you did. Thank
20 you very much.

21 MEMBER LOCKEY: Maurice, I just want
22 to clarify. As an apprentice in a trade, you

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1 didn't go across trade-wise, did you?

2 MR. COPELAND: Yes, I did.

3 MEMBER LOCKEY: You went from
4 pipefitter to welder to -- not that you welded,
5 but you went from one apprenticeship to
6 another?

7 MR. COPELAND: You didn't go through
8 the whole apprenticeship. You have 600 hours
9 that you have to spend, let's say, in machine
10 repair. That's where you clean the sump pumps,
11 overhaul the pumps.

12 With the electricians, you go
13 through -- I forget how many hours. It's all
14 -- they've got the schedule. All they have to
15 do is do a comprehensive investigation or what
16 you all doing. Pull out those records and see
17 what these people do to get that
18 classification.

19 When somebody says that this person
20 is waste management, supposedly, I guess they
21 were trained. So, there should be a training
22 schedule to say exactly what this person -- what

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1 qualified this person to do that job. And
2 you'll see that you go across the lines,
3 because, you know, your classification -- under
4 your classification are four or five other
5 classifications that you can bump down into
6 because you qualified yourself to be that.

7 So, all of those things go under --
8 when I went through the apprenticeship as a tool
9 and die maker, I got bumped all the way down to
10 a laborer.

11 I had 30 or 40 classifications that
12 I was qualified to do because I had done them.

13 MEMBER LOCKEY: It's a plant
14 apprenticeship rather than a trade
15 apprenticeship.

16 MR. COPELAND: Yes.

17 (Simultaneous speaking.)

18 MEMBER CLAWSON: Maurice, what he's
19 trying to understand, we've dealt with, you
20 know, designated unions and there was no cross
21 in that, but Bendix was different.

22 This was an inside-plant

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1 apprenticeship program there. And that's what
2 he was trying to make sure that we understood.

3 MR. COPELAND: Right. That was an
4 apprenticeship program. I understand. But
5 when we did loan people out late, they did have
6 time restrictions that you could loan a person
7 out.

8 You can only loan a person out, say,
9 for three weeks, 120 hours. Then you had to
10 pull them back.

11 You pull them back for two days.
12 Then you loan them out over again.

13 CHAIR BEACH: Okay.

14 MR. KATZ: That was Item 2. I think
15 he had more.

16 MR. COPELAND: And in any of this,
17 what I'm hearing, I just want to make it clear
18 that it seems like the judgments coming from --
19 what you're looking at is a book. It's
20 supposed to be written a certain way.

21 You're not dealing with what
22 actually gets the job done. You're not dealing

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1 with the exposures and -- that people actually
2 had.

3 The machining of the uranium and
4 these walls, I want you to understand these
5 walls did not go 30 foot high. I never seen
6 that before.

7 And we did use the high-pressured
8 air hose. The floors were made out of wood and
9 wood blocks. And these things, you know, in
10 the government, we like to have things clean,
11 you know. The lawn is nice. The office is
12 nice.

13 You took your high-pressured air
14 hose and you blew that stuff. And that stuff
15 went all over the place. It went over you. It
16 went over whatever was in there.

17 If a person came in to clean it up,
18 one of the laborers come in to clean it up,
19 they're sweeping. You're sweeping at the same
20 time when you're removing your chips away from
21 your cutter so that you don't have chatter that
22 really sprinkles out dust in machining these

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1 big billets.

2 And these billets are big and we had
3 a lot of waste. And that waste, we were on
4 stands. We were elevated on stands. And
5 those stands are made out of wood and it fell
6 down up under there.

7 And a lot of that stuff stayed down
8 there for a long time because you don't want
9 anybody crawling around up under there cleaning
10 while you're working, you know.

11 So, what actually happened? The
12 waste, the exposure, the chips, the scraps,
13 it's not like -- it's not a pretty picture.

14 MR. McCLOSKEY: Maurice, the
15 elevated platform, wooden platform where the
16 scraps trickled down to the floor, where was
17 that again?

18 MR. COPELAND: You know, I worked
19 around a lot of noise and I -- what did you say?

20 MR. McCLOSKEY: That elevated wooden
21 platform that you worked on where the turnings
22 or scraps would fall some distance to the floor,

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1 where was that again, that location?

2 MR. COPELAND: That was almost every
3 department. Department 20. Department 20
4 where we ran the billets.

5 MR. McCLOSKEY: Okay.

6 MR. COPELAND: The machine would
7 probably take up a third of this room. I think
8 somebody said they've been there.

9 And the curtains that were up were
10 very thick. They are thick rubber. Very
11 heavy rubber. I mean, you had to push, really
12 push your way through that.

13 It was laced with, I mean, years and
14 years of residue. Residue all over the place.
15 So was the machine.

16 And those sump pumps, you know, we
17 had to -- the operator had to -- in order to
18 machine, you had to keep the process going.

19 So, therefore, you were the one --
20 you, not waste management, was the one that was
21 adding the coolant, getting sprinkles all up on
22 you and going down actually into the sump on

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1 some of those machines.

2 The construction, I don't know when
3 you all talking about these machines, if you're
4 actually looking at -- in your head if you know
5 what the machine looks like, if you know what
6 the holding pit looks like.

7 It doesn't sound like it because
8 you're rubbing against this stuff. This is
9 your machine. This is your baby. You're
10 laying on it. You love what you're doing. You
11 like the sound of it, you know.

12 This is what actually happens, you
13 know. You touch it. You're scratching
14 yourself and all this stuff.

15 This -- these are the exposures and
16 this is the stuff that you all don't seem to
17 understand.

18 CHAIR BEACH: Some of us do. I
19 worked in a radiation area, zone.

20 MR. COPELAND: Yes.

21 CHAIR BEACH: Yes, we do understand.

22 MR. COPELAND: And overall, Mr.

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1 Clawson can give you a good scenario, a good
2 scenario of what we know about what we were
3 handling. The radioactive equipment,
4 radioactive products.

5 Tell me what I just learned 16 years
6 later about the box that I received. Tell
7 them.

8 MEMBER CLAWSON: Just that, well,
9 just a shipment that came in and a part was in
10 there and it wasn't labeled on the outside.

11 Actually, we found a lot of
12 documentation, just so you know that. And when
13 you opened up the box, it had a radioactive
14 sticker inside on the component that you were
15 receiving.

16 And there's quite a bit there.
17 We've got quite a bit on that.

18 MR. COPELAND: And I don't
19 appreciate that. I'm going to give you a cup.
20 Here's your cup and I got a radioactive part in
21 there and I want you to open it up. And I don't
22 -- you don't know it for 16 years.

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1 So, some of the questions that you
2 all asked on this stuff is what did the person
3 know? Was the person trained? Was the person
4 monitored?

5 Nobody told me anything for 16
6 years. I just found out this year.

7 MR. KNOX: May I piggyback on
8 Maurice's box issue? In the documentation
9 there is evidence, and I will present it to you
10 that there was contamination found on boxes.

11 And I'm a technician, but we do
12 things with ratios. If you look at the
13 alpha-beta ratio that's on this document, that
14 wasn't just plain old ordinary radioactive
15 material. Those were alpha emitters.

16 CHAIR BEACH: Before you go further,
17 was this a box from Kansas City?

18 MR. KNOX: Yes.

19 CHAIR BEACH: And what time frame?
20 '89 to --

21 MR. KNOX: Yes.

22 CHAIR BEACH: Okay. I just want to

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1 make sure we're talking about Kansas City.

2 MR. KNOX: And as you see, I
3 submitted that as a part of the petition, but
4 you can't just look at even those ratio numbers
5 because you got to look at how -- when they --
6 when it was wiped, how much did they get off,
7 you know? What is the efficiency for alpha
8 detection?

9 Alpha detection has a very low
10 efficiency in terms of being able to determine
11 how much is there.

12 So, this piggybacks on what Maurice
13 is saying. They have contamination throughout
14 the facility. I'll shut up.

15 CHAIR BEACH: No, you're fine.

16 MR. COPELAND: Okay. And this is
17 not my incident.

18 CHAIR BEACH; No, it's not.

19 MEMBER CLAWSON: We just wanted you
20 to see some of the other --

21 MR. COPELAND: Can I have my
22 assumption read?

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1 MEMBER CLAWSON: Sure.

2 MR. COPELAND: I understand that
3 this generator changes throughout the nuclear
4 weapons industry, this incident that I had. It
5 was a file that thick.

6 The generator changes throughout
7 the nuclear weapon industry on shipping,
8 receiving, the whole works.

9 How long have we been doing that?
10 How many boxes did I receive that had
11 radioactive parts in it throughout my 32 years
12 at that plant? How many did anybody receive?
13 Who did I give that part to? Who was I showing
14 it to? Who did I give it to to look at it and
15 look at the situation? Those people got a
16 dose, too.

17 I never knew it. So, therefore,
18 what precautions did I take to decontaminate
19 myself? None.

20 So, one of the questions in this SEC
21 is what did we know? Were we monitored? I
22 didn't know anything for 16 years. I have not

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1 been monitored yet. I have not been tested
2 yet. I have not -- I don't know what -- didn't
3 even know what it was.

4 And I have other situations as a
5 supervisor where my people were contaminated
6 and supposedly I wasn't. How was that? When
7 I'm their supervisor, I supply them with the
8 parts. I supply them with the material, but
9 I'm not considered.

10 I don't know. It's strange the
11 silences I'm hearing.

12 CHAIR BEACH: Okay. Those are --
13 and we are looking into those questions quite
14 extensively.

15 MR. COPELAND: Yes.

16 CHAIR BEACH: Maurice, anything
17 else? Any other --

18 MR. COPELAND: Not at this point.

19 CHAIR BEACH: Okay. So, you're done
20 for this section?

21 MR. COPELAND: Yes.

22 CHAIR BEACH: Okay. Thank you for

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1 your comments.

2 MR. KNOX: May I present Mr. Darnell
3 some information that I think he should look at?

4 Would you read Number 4, please?

5 MR. DARNELL: United States Code,
6 Title 18, Part 1018, Official Certificates or
7 Writings, which states, whoever, being a public
8 officer or other person authorized by any law
9 of the United States to make or give a
10 certificate or other writing, knowingly makes
11 and delivers as true such a certificate or
12 writing, containing any statement which he
13 knows to be false.

14 MR. KNOX: Do you really, really
15 believe that a footprint of an atomic bomb
16 explosion is ground zero?

17 MR. DARNELL: Atomic bomb explosion
18 has nothing to do with Kansas City Plant.

19 MR. KNOX: Okay.

20 MR. DARNELL: So, I'm not going to
21 answer that question.

22 MR. KNOX: Okay. Do you really

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1 believe that the exposures at the Kansas City
2 Plant were confined to those facilities in
3 which the work was done within the room and
4 department? Do you really believe that?

5 MR. DARNELL: Yes.

6 MR. KNOX: And have you read this
7 document which is from the Site Profile? And
8 I'll present it to you. It has --

9 MR. DARNELL: You don't need to
10 present --

11 MR. KNOX: Okay. Well --

12 MR. DARNELL: We've discussed that
13 document before.

14 MR. KNOX: Okay.

15 MR. DARNELL: I have read the Site
16 Profile.

17 MR. KNOX: Okay. So, you know then
18 that based upon the Site Profile, uranium was
19 found in the urine samples of most workers
20 including the administrative type.

21 So, how can you now make a statement
22 that it was confined to the footprint of that

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1 facility where the work was done? It was
2 outside of the facility, wasn't it?

3 MR. DARNELL: I don't have data that
4 shows me that. I have urinalysis data for a set
5 of workers that could have been involved in the
6 work. I don't care where they were within the
7 site.

8 If they were administrative workers
9 that came to the project and we have bioassay
10 data on it, we're going to take that into
11 account and give them -- if they become a
12 claimant, they will get their dose.

13 However, it doesn't matter where
14 they were physically located or where they
15 moved around to. If they became part of the
16 project and had bioassay done on them, they're
17 included.

18 MR. KNOX: The question --

19 MR. DARNELL: I have no other data
20 that shows me --

21 MR. KNOX: -- again is, do you
22 believe as you stated, that the exposure of

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1 workers were confined only to those workers
2 that were involved in actually performing the
3 processes?

4 MR. DARNELL: Yes.

5 MR. KNOX: You actually believe
6 that?

7 MR. DARNELL: Yes.

8 MR. KNOX: And then you look at this
9 and you believe this, too? Okay. You really
10 believe --

11 CHAIR BEACH: Okay.

12 (Simultaneous speaking.)

13 MR. KNOX: Let me move on then. You
14 have -- as I look at this facility, I look at
15 what's in the Site Profile and what's been the
16 Site Exposure Matrix.

17 Have you had the opportunity to go
18 through the Site Exposure Matrix --

19 MR. DARNELL: Yes.

20 MR. KNOX: -- and look at those --
21 oh, you have?

22 MR. DARNELL: Yes, I have.

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1 MR. KNOX: If you have done that,
2 then you will know that workers were exposed to
3 a lot of different radioactive materials based
4 upon their job category.

5 I have here some workers that were
6 exposed to powder, radioactive tin. You have
7 powdered materials that these people have been
8 working with and they are not those workers that
9 we would assume that was not exposed, that is
10 exposed to these materials as a performance of
11 these jobs.

12 MR. DARNELL: Off the top of my head,
13 the workers involved with the powdered thorium
14 standards that were used at the site were the
15 laboratory workers that dealt with the
16 standards that were being used.

17 Pat, correct me if I'm wrong if
18 there's any more than -- any more powders that
19 we came up with.

20 MR. KNOX: Do you --

21 MR. McCLOSKEY: No.

22 MR. KNOX: Do you believe that you

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1 have fully done the research?

2 MR. DARNELL: No.

3 MR. KNOX: But that's what you
4 stated.

5 CHAIR BEACH: Well, as we expressed
6 --

7 MR. DARNELL: No, this is an ongoing
8 process. And as you can see by the whole
9 meeting today, it's an ongoing process.

10 We come together. We're
11 discussing the science behind what has been
12 done so far, finding what we need to do more work
13 on and we're identifying that and making plans
14 to continue on.

15 CHAIR BEACH: Yes, this is
16 preliminary steps and --

17 MR. KNOX: But he states that the --
18 he has fully done the research.

19 CHAIR BEACH: But this isn't attack
20 NIOSH time frame and that's what it feels like
21 to me, Wayne. So, I'm just saying if you could
22 limit your --

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1 MR. KNOX: Okay.

2 CHAIR BEACH: -- discussion to new
3 topics that we haven't discussed --

4 MR. KNOX: Okay. Contamination was
5 found outside of the facility. It represents
6 based upon the act a nuclear incident.

7 Here are the references. The last
8 time we talked you said, give me the numbers.
9 I can give you the documents, but here are
10 documents that list where materials were found
11 outside. Uranium was found in stairwells
12 there in the GSA side.

13 Now, it's only anecdotal that you
14 had radioactive contaminants found in the
15 daycare center on the site. You had
16 contaminants found on the GSA side.

17 Well, because, you didn't see any
18 radioactive material, because you didn't make
19 radiological measurements. So, you don't see
20 it if you don't make the measurements with
21 radioactive -- radiation-detection
22 instruments.

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1 We make a statement here and I have
2 explored the promethium-147 incident. And we
3 say that there was no personnel contamination
4 in the Site Exposure Matrix, but how can that
5 be when you have the contamination? The
6 promethium was found where? In New Mexico.
7 It was not found here at the Kansas City Plant.

8 It was also found in Mound. It was
9 found in Amersham, England and yet you say that,
10 hey, there was no personnel contamination.

11 It was found in the homes of five
12 workers, but there was no personnel
13 contamination.

14 You had a Janitor that it was found
15 on her toilet, on her pillow, on her carpet --

16 CHAIR BEACH: That's very
17 well-documented.

18 MR. KNOX: Yes, but he is saying
19 that, it was comprised of the footprint, which
20 is not true and you've got to know that's not
21 true.

22 MR. DARNELL: All we are allowed to

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1 look at for the Kansas City Plant is the site
2 that is defined by the Department of Labor.

3 I understand what you're saying
4 about Amersham and Los Alamos and Mound and
5 anyplace else. It's unfortunate, but for the
6 limits of what we are allowed to address, it is
7 also irrelevant.

8 MR. KNOX: Yes, but you can't -- you
9 should not make false statements concerning it.

10 MR. DARNELL: I haven't made false
11 statements.

12 MR. KNOX: You should at least say
13 that, hey, we can't go that far. There are
14 other things if you look at the exposure
15 pathways of this facility, you have a common
16 ventilation system.

17 MR. DARNELL: Did you receive the
18 letter I sent you back --

19 MR. KNOX: Yes, let's not -- let's
20 work on what I'm talking about. We have a
21 common ventilation system. So, the material
22 was tracked. People would come in and out of

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1 it.

2 You had people that worked for GSA
3 that moved inside of that facility using their
4 GSA equipment to work on contaminated systems
5 and then move right back out. They're not even
6 considered.

7 MR. DARNELL: Mr. Knox, I empathize
8 with you about personnel with GSA. And
9 regardless of what happened to them, I know that
10 their people had got sick while working at GSA.

11 However, they are outside of the
12 designated facility.

13 MR. KNOX: They are not.

14 CHAIR BEACH: Okay. Hold on a --

15 MR. DARNELL: They are outside --

16 MR. KNOX: The facility is defined as
17 the facility and the surrounding grounds. How
18 can you say one half of a facility is not part
19 of the facility? That, to me, is a false
20 statement.

21 MR. DARNELL: I'm sorry, sir. That
22 is something that we as NIOSH cannot address as

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1 to what the facility definition is.

2 And as we spoke before, you need to
3 speak with your elective representative, take
4 it back to Washington to get the law changed.

5 MR. KNOX: The law --

6 MR. DARNELL: We cannot do it.

7 MR. KNOX: -- is clear. It's not
8 the law. It's the interpretation of the law.
9 The law is clear to anyone --

10 MR. DARNELL: Then your complaint is
11 with --

12 MR. KNOX: -- that one part of a
13 building is --

14 MR. DARNELL: -- the Department of
15 Labor.

16 MR. KNOX: -- on the same grounds as
17 the other part.

18 CHAIR BEACH: Okay. So, let me
19 break in. Wayne, I know that some of this
20 information has been talked about in the past.
21 And what we really need to do is stick with the
22 action items and the topics that we're

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1 discussing on the matrix.

2 Issues of that nature aren't of this
3 Work Group. And I would like you to be able to
4 further address this Work Group, but we need to
5 stick on a topic.

6 MR. KNOX: Okay.

7 CHAIR BEACH: Otherwise we're going
8 to have to end this dialogue at this point.

9 MR. KNOX: Okay. Let's go back to
10 the original question of --

11 MEMBER POSTON: No, no, no, no.

12 CHAIR BEACH: Let's move forward.

13 MEMBER POSTON: Wayne --

14 MR. KNOX: The --

15 MEMBER POSTON: Wayne, you were
16 asked to comment on what we've been doing.

17 MR. KNOX: Yes.

18 MEMBER POSTON: You haven't done
19 that. You haven't done that.

20 MR. KNOX: Okay. I am --

21 MEMBER POSTON: You need to listen to
22 what the Chairman is telling you. She's being

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1 very gracious. She's offering you a chance to
2 talk to this group and comment on the 12 items
3 that we have discussed this morning.

4 You're not doing that and as far as
5 I'm concerned, I'm tired of hearing it. So,
6 I'm going to leave if you continue.

7 MR. KNOX: Okay. Let's talk about
8 the gathering of information, and this was part
9 of this, the completeness of information.

10 The first step should have been to
11 look at what was required by regulation. This
12 is the regulatory requirement.

13 I have made a sheet, a matrix that
14 says what kind of information would be needed
15 in order to at least have a complete set of
16 documents because all of this document -- we
17 talk about completeness, but I'm not so sure
18 that we are working at the mathematical concept
19 of completeness.

20 Any data has to be accurate,
21 precise, complete and comparable and
22 representative. And I'm saying that all we

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1 talk about here is completeness, but we are not
2 using the concept of completeness.

3 To determine completeness, you
4 identify all of the material that is there.
5 You set up data quality objectives. And that
6 data quality objective is 99 percent
7 probability of the -- Probability of Causation.
8 So, your data quality objectives is at the 99
9 percent plus level.

10 Now, how do you -- you indicate that
11 you have collected over three million
12 documents.

13 Have you really evaluated all of
14 these documents? And then, again, we go back
15 to the old issue of, yes, we -- okay.

16 I will say one other thing. I'm not
17 saying anything else. I apologize. I have to
18 laugh.

19 I was a technical intelligence
20 officer. We were locked in a vault, inside of
21 a vault for four years of my military duty and
22 we have to laugh at what was happening, and,

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1 unfortunately, I have to sit back here and just
2 laugh at what is happening here because there
3 are people that are suffering and dying as we
4 delay.

5 CHAIR BEACH: Wayne, we take this
6 very seriously. I mean, I can't stress that
7 any more. We take it seriously. And we take
8 each topic, each situation and we're going to
9 work it until both sides are satisfied that
10 we've uncovered all the documents that are out
11 there, we've talked to the workers.

12 The process works, but it takes
13 time. This is our first meeting. So, if
14 anybody else wants to jump in, I think we need
15 to break for lunch.

16 MR. KATZ: I think that's a good
17 idea.

18 CHAIR BEACH: Okay. So, about an
19 hour. So, one o'clock.

20 MR. KATZ: Okay, guys. I'm turning
21 off the line until -- we'll be back around one.

22 (Whereupon, the above-entitled

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1 matter went off the record at 12:02 p.m. and
2 resumed at 1:03 p.m.)

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1 makes it easier if you just address that Item
2 13 which is really the mag-thorium itself.

3 DR. MAURO: In fact, they are very
4 different subjects.

5 MR. FITZGERALD: Right. Right.
6 And I think just to keep it smooth if you can
7 start with mag-thorium, then go to uranium.

8 DR. MAURO: Sounds good. If you
9 folks are ready, I can get started.

10 CHAIR BEACH: Yes.

11 DR. MAURO: Okay. Yes, I reviewed
12 the mag-thorium issue and prepared a draft
13 White Paper that's actually currently being
14 independently reviewed by Ron Buchanan.

15 And, in fact, I reviewed the SEC
16 Petition Evaluation Report. There's a section
17 there 7.2.3.1 that talks specifically about
18 this subject.

19 And it turns out there is one SRDB
20 in particular that was useful. It's Number
21 128-148.

22 In addition, as you may know, we did

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1 a lot of work a number of years ago on Dow
2 Chemical which was also concerned with
3 magnesium-thorium alloy. And that experience
4 and that information also helped in looking
5 into this issue.

6 It turns out that there was
7 machining of magnesium-thorium alloy at the
8 Kansas City Plant beginning in 1957 and
9 continued on for quite some time.

10 And the process of machining that
11 material generates an airborne aerosol that
12 represents potential internal exposure from
13 inhalation.

14 It's important to keep in mind that
15 the alloy itself is three percent thorium based
16 on the review of the material. So, it's not
17 pure thorium and it's thorium-232. And the
18 degree to which its progeny, and we'll talk a
19 bit about that shortly, is present is also of
20 course of interest, including thoron.

21 The approach -- now, there's very
22 limited useful air sampling data to predict

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1 what the air dust loading of the mag-thorium
2 was. And there is no bioassay that's useful
3 that will allow us to reconstruct the internal
4 doses from that aerosol, but NIOSH did take --
5 have a strategy to come at the problem to try
6 to place a plausible upper bound.

7 In looking at the program, the
8 health physics oversight program, there was a
9 limit, a maximum permissible concentration
10 limit established for airborne thorium at the
11 facility of nine times ten to the minus 11
12 microcuries per milliliter of air.

13 And the basic approach NIOSH is
14 adopting is to assume that that concentration
15 is present all the time at that limit.

16 Now, normally when we review
17 something like this, we don't presume that that
18 limit is always maintained.

19 It's certainly good that there's a
20 limit and it certainly appears that there was
21 oversight to help ensure that the airborne
22 levels of various potential toxins including

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1 beryllium were being under control, but NIOSH
2 did one other thing that I think was very
3 helpful in what you would say to provide
4 assurance that was a reasonable upper bound.

5 And that is they said, okay, if you
6 have an airborne level of magnesium-thorium
7 alloy particulates due to machining
8 operations, what does that turn into in terms
9 of milligrams per cubic meter in air.

10 It turns out that it turns out to be
11 27.3 milligrams of dust per cubic meter, which
12 is a very high number.

13 It's such at a level that is above
14 a level that you was taught to be concerned
15 about, respiratory distress. And so, that
16 sort of lends credence to the fact that it's
17 unlikely that you would have prolonged periods
18 of time where the airborne dust loading of the
19 thorium would exceed that maximum permissible
20 concentration of nine times ten to the minus 11
21 microcuries per milliliter.

22 So, those two arguments I found

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1 fairly compelling. That is in terms of placing
2 a plausible upper bound on what the long-term
3 chronic -- potential for internal exposure
4 would be for workers involved with the
5 machining of this alloy.

6 One question though that did emerge
7 as I worked through this was from my experience
8 with Dow, Dow not only was involved with the
9 machining and handling of the alloy, but they
10 actually produced the alloy where they would
11 work with what was called the master alloy.

12 They would take an alloy that was
13 actually close to, I think, about 50 percent
14 thorium and dissolve that in the molten
15 magnesium which was a different kind of
16 situation creating the potential for other
17 types of exposures.

18 Now, the -- in reading the material,
19 it does not appear that there was actually the
20 manufacturing of the alloy taking place at
21 Kansas City Plant.

22 I just -- my question I guess to

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1 NIOSH is to confirm that that in fact is the
2 case.

3 The only thing that they did was to
4 machine the alloy that -- what arrived at the
5 facility was this three percent
6 magnesium-thorium alloy that was machined and
7 they were not actually manufacturing the alloy.

8 MR. McCLOSKEY: I believe we can
9 product documents, John, that show KCP
10 purchasing it from Dow Midland.

11 DR. MAURO: Excellent. That was my
12 first question and that would be useful to have
13 a statement to that effect. So, we can put that
14 one to bed.

15 That being the case, so we're
16 working with magnesium-thorium alloy now and I
17 for one believe that the number that they have
18 chosen as their plausible upper bound for
19 chronic exposure is certainly plausible and
20 bounding for the reasons I just explained.

21 One of the challenges of course will
22 be who are we going to assign this to? This is

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1 a subject of a great deal of interest by the
2 stakeholders, the petitioners and the workers
3 about, you know, okay, perhaps you can place a
4 plausible upper bound on the dust loading, but
5 who are you going to assign that to and how are
6 you going to make that determination?

7 I'm just assuming that you're going
8 to be extremely flexible -- not flexible.
9 What's the word I'm looking for? That if
10 there's any potential for a person to have
11 experienced this type of exposure, you will
12 assign them the full 2,000 hours per year
13 certainly for the workers that were doing the
14 actual machining operation.

15 It's always going to be a challenge
16 to determine, you know, who's going to get 50
17 percent, who's going to get whatever other
18 percentiles are used for the supervisors, the
19 clerks, the clerical and I understand that that
20 is a challenge whether or not you raise that to
21 an SEC issue.

22 In the past, my recollection is

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1 generally that was sort of a Site Profile issue.
2 How are you going, you know, you can place a
3 plausible upper bound, but how are you going to
4 determine who belongs to the high-end class,
5 the one that's going to be assumed to be exposed
6 for 2,000 hours per year.

7 So, that's sort of in a nutshell
8 where we come out at least currently in our
9 draft work regarding thorium-232.

10 Let me move on to the progeny. The
11 -- one of the deficiencies of the SEC Petition
12 Evaluation Report is the report is silent
13 regarding thorium -- well, really the radium,
14 the progeny, the radium that grows in from the
15 thorium-232, for example.

16 So, I did a few calculations to say,
17 okay, let, you know, when the thorium alloy
18 shows up, it's thorium-232 alloy, but there's
19 also going to be present with it one of -- the
20 other thorium, 228, and in time, various other
21 radionuclides grow in. It may take some time.

22 The radium-228, for example, I

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1 think has about a five-year half life. So, of
2 course you'd have to be fairly aged, but in
3 theory, you know, you could receive some aged
4 alloy.

5 So, I went ahead and said, okay,
6 what happens if along with the thorium-232, all
7 the progeny were present in equilibrium also.

8 Does that really -- could that have
9 a substantial effect on the inhalation dose
10 that you would calculate?

11 It turns out my calculations show --
12 now, the report is silent on this. I think the
13 work would benefit -- the SEC Petition
14 Evaluation Report would benefit from this type
15 of calculation. But I went through it and I
16 said, okay, if they were there, what would
17 happen?

18 It turns out that the other
19 radionuclides, the progeny, their dose
20 conversion factors, you know, are much, much
21 smaller than the dose -- inhalation dose
22 conversion factor for thorium-232.

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1 So, even if they were present there
2 in equilibrium airborne, they're not going to
3 have more than like 10 percent of that.

4 And I believe built into the default
5 dust loading, the use of thorium-232 is enough
6 conservatism that that extra -- even if -- now,
7 even if the other progeny were present there in
8 equilibrium, they're really not going to change
9 anything.

10 So, I sort of convinced myself that
11 the strategy being used even though they're
12 silent in the writeup on this matter, is
13 claimant-favorable and scientifically sound.

14 So, I walk away saying
15 notwithstanding the fact that they do not
16 explicitly address the progeny of thorium-232,
17 I don't think they're important.

18 In other words, they're assumed to
19 be there, they may have a 10 percent effect on
20 the dose calculation and the big picture in
21 recognizing the inherent conservatism and the
22 fundamental assumption regarding the

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1 thorium-232, I feel as if they're covered.

2 But of course this is something that
3 -- a judgment that they -- the Work Group needs
4 to make and be comfortable with themselves.

5 Finally, I'm almost done, is
6 thoron. One of the radionuclides that will
7 grow in fairly quickly is thoron.

8 And what NIOSH did was say, listen,
9 in order to account for the contribution of
10 thoron to the inhalation dose, they're assuming
11 that thoron is present, and of course its
12 short-lived progeny, at 30 percent of the
13 concentration of the thorium-232.

14 I considered this to be a reasonable
15 value recognizing that -- you can almost
16 envision the thoron -- you have these airborne
17 particulates, these five micron AMAD
18 particulates of thorium-232 floating in the
19 air. And it's thorium-232 with possibly
20 thorium-228 and the thoron grow in fairly
21 quickly from the thorium-228.

22 And you think in terms of this when

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1 it decays, not all of the thoron will escape and
2 become airborne. It's going to be trapped. A
3 lot of it will be trapped inside this little
4 particle, but some of it, you know, could get
5 out.

6 And you may be familiar with this in
7 the radon world. It's called the emanation
8 coefficient.

9 In effect, they're assuming that 30
10 percent of -- if there's thoron there, 30
11 percent would make it airborne. So, they're
12 assuming that the concentration of thoron in
13 the air is 30 percent of the concentration of
14 the thorium-232 in the air.

15 I consider that to be a plausible
16 upper bound of the presence of thoron airborne.

17 So, my takeaway from this, and this
18 is what's written up, is that the approach that
19 NIOSH has adopted to assign upper bound,
20 plausible upper bound, is scientifically sound
21 and I am comfortable with it basically using
22 that nine times 10 to the minus 11 microcuries

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1 per cc as if, you know, 2,000 per year and it's
2 always at that level.

3 It's highly unlikely that that in
4 fact was the case given that that would be
5 associated with a fairly high dust loading. 27
6 milligrams per cubic meter.

7 So, bottom line is I feel as if this
8 is an issue that has been adequately addressed.

9 MR. DARNELL: Strange as it may be to
10 believe, but NIOSH agrees.

11 DR. MAURO: Okay.

12 MR. STIVER: Hey, John. This is
13 John Stiver. I got a quick question for you.

14 Are we reasonably sure that the
15 thorium content was only at three percent in all
16 of the magnesium-thorium alloy that was
17 processed there?

18 DR. MAURO: Fair question. You
19 know, when I looked at the SRDB and of course
20 the SEC Petition Evaluation Report, that seems
21 to be the case.

22 And my experience, by the way, with

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1 thorium alloy from other work like the Dow work,
2 that's where -- that's the level -- when they
3 make -- they make thorium alloy because it has
4 certain metallurgical properties regarding
5 heat, resistance and structural strain for
6 various uses.

7 And that's the typical
8 concentration of the -- of thorium in
9 magnesium-thorium alloy. So, I was not
10 surprised to see that that's the number that was
11 used and that's what we found in the literature.

12 Now, certainly if there are some
13 exceptions to that, we may have some
14 metallurgists involved that would know a lot
15 more about it than I do that could say, no, there
16 are circumstances where you may work with
17 higher quantities and -- but as best I can tell
18 from what I've read in the SRDB, from my
19 experience with the Dow work, that is a good
20 number.

21 DR. NETON: John, this is Jim. I
22 think I recall looking at the literature that

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1 this was specified as the HK-31, I believe,
2 thorium-magnesium alloy.

3 DR. MAURO: Yes.

4 DR. NETON: That has a specific
5 meaning in the commercial industry. And I
6 believe it translates over to three percent
7 thorium.

8 DR. MAURO: Now that you mention it,
9 I remember Bill Thurber looking at that very
10 issue and you are correct, yes.

11 MR. STIVER: All right. Thanks a
12 lot. That makes a lot of sense.

13 MR. DARNELL: So, the only takeaway
14 from Issue 13 then is we need to produce the
15 document that shows that mag-thorium was
16 purchased from Midland Dow.

17 DR. NETON: We need to review the
18 report, White Paper, when it comes out when it's
19 finalized. It may be slightly different.

20 MR. FITZGERALD: But I think that's
21 a pretty fair walk through.

22 DR. NETON: Okay.

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1 CHAIR BEACH: So, that's part of the
2 story, right? I mean, there's other
3 contributing factors.

4 I was just pulling up the ER review
5 and it says it was limited, not large scale,
6 temporary basis.

7 DR. NETON: Yes, well, that was sort
8 of the weight of the evidence issue that we felt
9 that the value we chose was bounding, which John
10 kind of got into.

11 DR. MAURO: I do think beside this --
12 the issue of whether there may have been other
13 production work going on, it sounds like that
14 you have evidence -- there's also -- a general
15 statement is made that, you know, operators,
16 folks who did the machining work would be
17 assigned that concentration 2,000 hours per
18 year, but supervisors and other personnel would
19 be assigned something less.

20 That's always a difficult problem.
21 In my experience, usually you make those
22 judgments on a case-by-case basis based on

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1 looking at the CATI reports on individual DRs,
2 dose reconstructions.

3 However, we heard earlier from the
4 petitioners that folks, you know, changed jobs
5 a lot, did a lot of different things, were in
6 different areas, that sort of thing.

7 So, I think one of the
8 vulnerabilities is how are we going to go about
9 deciding who's going to get the full dose, who's
10 going to get the 50 percent or the 10 percent.

11 That's always going to be a
12 challenge that, you know, we'll -- but my guess
13 is that's addressed during the actual
14 implementation.

15 CHAIR BEACH: Yes, that's Site
16 Profile --

17 MR. FITZGERALD: That would be an
18 implementation issue.

19 CHAIR BEACH: Yes.

20 DR. MAURO: Yes.

21 MR. DARNELL: And that's also part of
22 the data that we're going back to Kansas City

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1 to collect -- bioassay data within the medical
2 records and the access lists.

3 MR. FITZGERALD: Now, John, you said
4 something before and I think this is germane to
5 TBD-6000 that this assumes that the source of
6 thorium is this one operation, right?

7 DR. MAURO: Yes, the machining
8 operation. The only source of thorium would be
9 machining of magnesium-thorium alloy billets
10 of some sorts that was shipped to Kansas City
11 Plant as three percent magnesium-thorium alloy
12 to be machined.

13 MR. FITZGERALD: Yes. The reason
14 I'm raising it is that, you know, there's sort
15 of two elements.

16 We wanted to I think early on focus
17 on TBD-6000. And John has been working very
18 closely with it and felt that, you know, we
19 could get started on that review early.

20 And then the -- sort of the other
21 facet of it was to look at some of the
22 parameters, make sure that, you know, we looked

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1 at the supervisor, you know, sort of the job
2 category breakdown and also other sources of
3 thorium.

4 And the reason I'm raising this,
5 we're going to talk about this a little later,
6 but looking at the inventory, you know, this
7 non-alloy thorium I still don't quite
8 understand what I was reading on the inventory
9 data, the kilogram sources.

10 But I think what we want to do is
11 just clarify exactly what that means and to make
12 sure that this would be the source of any
13 thorium that would be modeled as an exposure
14 source.

15 MR. DARNELL: Actually, we discussed
16 that very issue when we were at Kansas City with
17 Nelson. That was one of the items we're not
18 allowed to write down.

19 MR. FITZGERALD: Okay. I didn't say
20 it. But in any case, that issue is certainly
21 one relevant issue to TBD-6000 working in this
22 case.

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1 And I think we just want to make sure
2 that that's the -- that it is in fact the case,
3 it's the sole source of potential exposure to
4 thorium and I'll leave it at that.

5 CHAIR BEACH: Well, and that's an
6 important factor.

7 MR. FITZGERALD: Well, it's an
8 important factor. I'll leave it at that. And
9 like I said, we still have I think a little bit
10 more research to do on it.

11 MR. DARNELL: Everything we have
12 points to this being the machining source of
13 exposure.

14 There were other thorium on the
15 site. Some of it we can't discuss. And there
16 was lab scanners.

17 MR. FITZGERALD: Right. So, you
18 know, I think as we firm that up, I think we'll
19 be fine with this. And I think certainly as you
20 heard, we're fine with the methodology.

21 So, there's a little bit of some
22 basic data capture/review beyond this one

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1 interview that we need to do on this one.

2 MR. McCLOSKEY: The only thing I'd
3 add is John started his discussion of his paper
4 with the date of 1957 from the ER.

5 CHAIR BEACH: I was just going to
6 mention that.

7 MR. McCLOSKEY: And just recently
8 we're now saying --

9 MR. FITZGERALD: 1954.

10 MR. McCLOSKEY: -- 1954 based on an
11 interview we conducted last month. Now, we
12 selected '57 based on those (name redacted)
13 court records. So, we felt like those were --
14 that was a good record of the start date.

15 MR. DARNELL: I think it's actually
16 a good time to bring up the discussion of the
17 1954 date.

18 I was in the interview with the
19 gentleman that spoke to it and I have little
20 doubt that he believes he worked on thorium in
21 1954.

22 However, the area where he says he

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1 worked on thorium again is outside of the
2 facility. It's not part of the facility.

3 And regardless of the case being if
4 it's outside, it's not something that we can
5 take into account. Our records right now show
6 1957, which is what we've got to use.

7 Perhaps we can go look for more --
8 something else to try to see if we can bring that
9 work into the facility, per se, but right now
10 we really can't address it because it was in
11 Area 20A, I think he said, or something like
12 that. Something that was outside of the
13 defined facility is where --

14 MR. FITZGERALD: I wasn't aware that
15 20A was --

16 CHAIR BEACH: I wasn't either.

17 MR. FITZGERALD: I think we have to
18 corroborate that with further records.

19 MR. DARNELL: Right, but I just
20 wanted to make sure we all understood.

21 MR. FITZGERALD: Okay.

22 MR. DARNELL: The understanding we

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1 have --

2 MR. FITZGERALD: 1954.

3 MR. DARNELL: '54 was actually done
4 outside of the defined facility. So, while we
5 can definitely pull the string, right now we
6 can't change --

7 MR. FITZGERALD: Change that date.

8 MR. DARNELL: -- the date based on
9 --

10 CHAIR BEACH: Sure.

11 MR. FITZGERALD: Okay. Does that
12 make sense?

13 MEMBER CLAWSON: Yes, it does. I
14 just want to make sure that we understand
15 because these areas that we're dealing with a
16 map of a certain age and it has this area is here
17 and dah-da, dah-da, dah-da, dah-da.

18 Those have changed over the years.
19 So, we need to get one back in this time frame
20 because as we've heard from petitioners, as
21 we've heard from everybody, these areas could
22 move from one place to another as time changes.

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1 MR. McCLOSKEY: Agreed. We've had a
2 few maps come in this week. There's a few maps
3 that KCP, Tara and company are photographing
4 and sending to us now.

5 We've gotten a lot of maps and we're
6 going to continue to try to understand how --

7 MR. DARNELL: We are working on that
8 to try to make sure that we have the definition
9 correct for especially this work.

10 It's not going to be a huge impact
11 dosimetrically, but if the date was '54, it
12 needs to be '54. If it was '57, it needs to stay
13 '57. We've just got to get it correct.

14 MR. McCLOSKEY: Yeah, I'll continue
15 to feel like I don't completely understand the
16 layout and jump up whenever someone said that
17 something occurred here and --

18 (Laughter.)

19 MEMBER CLAWSON: Yes, because when
20 we took the tour and we were going back with a
21 lot of the older people, they said, you got to
22 understand, and they were pulling me to the GSA

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1 side, by the end of the day, this was this area.
2 We've covered all of this area.

3 Then when GSA took it over, it went
4 over to this area. Little bit smaller. And
5 this is what I want to make sure that we cover,
6 because that's an important process.

7 MR. DARNELL: I think it's very
8 important that we nail it down because if the
9 size of the facility is wrong, the definition
10 of facility is wrong, that's something that we
11 need to go back with DOL, but we have to have
12 something to substantiate what we're saying.

13 CHAIR BEACH: Right.

14 MR. DARNELL: And we just haven't
15 found that part yet.

16 MR. FITZGERALD: Just one interview.

17 CHAIR BEACH: Okay. So, I've got
18 action items. NIOSH, you're going to produce
19 the document, the purchase order from Dow? Did
20 I get that right?

21 MR. DARNELL: Yes.

22 CHAIR BEACH: You're also looking at

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1 bioassay data and access records for Kansas
2 City for this also.

3 MR. DARNELL: Right.

4 CHAIR BEACH: And then I put under
5 NIOSH and SC&A, continuing to review other
6 sources for thorium.

7 Do I have that right or other
8 operational -- oh, and part of that's incidents
9 and fires and -

10 DR. NETON: Isn't that a separate
11 issue, the other thorium?

12 CHAIR BEACH: Yes, that's why I'm
13 asking about --

14 MR. McCLOSKEY: Yes, that's another
15 issue.

16 MR. FITZGERALD: It's a separate
17 issue. It ties into the TBD-6000 discussion
18 because it's a factor --

19 CHAIR BEACH: It's a factor and not
20 deemed relevant.

21 MR. FITZGERALD: It's separate, but
22 it's just something to mention.

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1 CHAIR BEACH: Okay. And then you're
2 going to pull the string for work being done for
3 that '54 time period. You mentioned that.

4 MR. DARNELL: We're continuing to
5 look into maps and find out what the correct
6 size is and then it will depend on DOL's
7 determination.

8 CHAIR BEACH: I understand that,
9 yeah.

10 MR. McCLOSKEY: I haven't seen the
11 interview notes from this gentleman who said
12 '54. I'd like to pull those in, read it and --

13 CHAIR BEACH: Yes, I don't think we
14 have all those back yet.

15 MR. FITZGERALD: Well, we have them
16 back. They haven't summarized it. They
17 haven't returned them to the interviewees.

18 CHAIR BEACH: Interviewees and -

19 MR. FITZGERALD: Yes.

20 CHAIR BEACH: So, that's ongoing.

21 MR. FITZGERALD: That's working
22 right now, right.

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1 CHAIR BEACH: And then, John, can you
2 tell us do you know when your report is going
3 to be -- I know Nancy is working on it.

4 Do you have kind of a date when that
5 will come out to the Work Group?

6 DR. MAURO: I think, Joe, you're
7 probably in a better position because you're
8 ahead with Ron.

9 MR. FITZGERALD: Yes. Actually,
10 Ron and I are pretty much done. John Stiver was
11 looking at it. And Nancy was getting it. So,
12 it's one of these I think the train is pretty
13 far along.

14 So, not long. I would say within a
15 week or two.

16 CHAIR BEACH: Okay. So, you'll see
17 that come out --

18 MR. FITZGERALD: Yes, fairly
19 shortly.

20 Now, you indicate you're about to
21 receive some urinalysis records that were
22 requested for --

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1 MR. DARNELL: Those are the records
2 that we have been talking about.

3 MR. FITZGERALD: Okay. Part of that
4 package.

5 MR. DARNELL: Yes.

6 MR. FITZGERALD: Okay.

7 CHAIR BEACH: Okay. Anything else
8 from Work Group Members on 13?

9 MEMBER CLAWSON: We're going to just
10 specifically talk about TBDs. It's --

11 (Simultaneous speaking.)

12 MR. FITZGERALD: We're going from
13 thorium to uranium, which is -- we're going to
14 talk thorium and uranium under 16. This looks
15 like it could be easier to talk about it, you
16 know, using 13 as a jump-off point for mag-thor
17 rather than do it twice.

18 So, John, can you take 16 and focus
19 on the uranium?

20 DR. MAURO: Sure. It's important to
21 realize, first of all, that TBD-6000 is for
22 uranium, not for thorium.

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1 CHAIR BEACH: Right.

2 DR. MAURO: And I did also prepare a
3 draft White Paper that addressed TBD-6000 and
4 how it was used. And also it turns out they
5 used OTIB-70. Let me explain.

6 There certainly were a lot of
7 different uranium operations taking place at
8 the facility. I only looked at a very specific
9 time period from 1950 through 1955.

10 A large quantity, about a thousand
11 slugs per day were machined at Kansas City Plant
12 in the Manufacturing Building, which I guess is
13 a pretty big building. And it was set up
14 specifically for a large-production operation
15 where they were producing 1,000 slugs per day.
16 And it was your classic lathe operation and
17 cutting operation.

18 There were -- from my understanding
19 of the data, there really isn't any air sampling
20 data or bioassay data to help us reconstruct the
21 doses from those exposures.

22 Jim had mentioned earlier though

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1 they may have some bioassay data, which is
2 great. It's going to help us validate and
3 verify that the TBD-6000 approach works.

4 The extent to which -- as you know,
5 TBD-6000 has been vetted very thoroughly. I'm
6 not sure if the claimants and petitioners that
7 on the line are familiar with it, but in a
8 nutshell a really major investigation was done
9 in the 1950s that tried to understand the nature
10 of the exposure to uranium metal that was being
11 experienced throughout the weapons complex in
12 the early years where they were machining and
13 working with uranium, uranium metal for the
14 purpose of making fuel.

15 And there were a lot of private
16 companies that were under contract to do this
17 and the Atomic Energy Commission at the time at
18 the Environmental Measurements Laboratory,
19 probably one of the foremost laboratories in
20 the world, was asked to do a comprehensive
21 evaluation of, well, gee, what kind of
22 exposures are all these workers at these

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1 private companies experiencing, because all of
2 a sudden these companies were being asked to
3 help in the weapons program because they had
4 certain skills with metallurgical and
5 metalworking that were valuable for working
6 with uranium.

7 They mainly worked with steel, and
8 now all of a sudden they've been asked to,
9 listen, let's take advantage of these companies
10 in the -- sort of like the inception of the Cold
11 War back in the late '40s and early '50s to get
12 the uranium metal into a form that could be used
13 for the weapons program.

14 So, a large study was performed by
15 the -- it was called the Health and Safety
16 Laboratory. I hope this is okay. I thought it
17 would be helpful for the petitioners just to get
18 a quick understanding that there is a large
19 dataset that was compiled by the best we had at
20 the time to understand what are the dust
21 loadings, what are the exposure scenarios when
22 someone machines uranium with a lathe, a

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1 centerless grinder cuts it, extrudes it, rolls
2 it.

3 There are all these different
4 things you do with uranium metal to get it to
5 where you want it to be.

6 It turns out that when you don't
7 have real data like air sampling data, bioassay
8 data, NIOSH makes use of TBD-6000. this is a
9 special report that says, listen, we have all
10 this great information that was developed by
11 the Health and Safety Laboratory and all this
12 experience from these facilities which really
13 captures the full range of the kind of things
14 people did with uranium metal in those days.

15 We said, boy, you know, I think we
16 could use this information as a surrogate. So,
17 we referred to the thing as surrogate data. A
18 surrogate for the fact that we don't have good
19 air sampling data at least for Kansas City Plant
20 from 1950 to '55 when they were doing these
21 fairly large amounts of machining operations
22 with uranium.

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1 Okay. So, now what NIOSH elected
2 to do is they looked at what they call the matrix
3 of data. Think of these tables that say, well,
4 here's the range of concentrations of uranium
5 in the air when people use a lathe, when people
6 do centerless grinding.

7 The difference in one case it's sort
8 of like sandpaper. Centerless grinding really
9 creates a lot of fine dust.

10 A lathe is more like a plane.
11 You're planing it. You're shaving things off.
12 So, centerless grinding generates a lot more
13 dust.

14 They have data on extrusion or
15 rolling uranium into different shapes. And
16 there's a lot of very good data collected by
17 really excellent scientists and establishes
18 the foundation, the fundamentals of what we
19 refer to as TBD-6000.

20 NIOSH used TBD-6000 as a surrogate
21 for a way to estimate the exposures that were
22 experienced by Kansas City Plant workers from

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1 1950 to 1955 when they were actually machining
2 uranium which is primarily, and this is
3 important, a lathe operation.

4 And then they also used something
5 called OTIB -- TBD-070 -- OTIB-70. OTIB-70
6 which is directed to, well, once those
7 operations stop in 1955, we know that there's
8 going to be some residue, uranium dust and you
9 want to take that into consideration also.

10 So, even though the operation has
11 started, there are workers there, they're still
12 working, doing other things and could be
13 exposed to the dust that could be resuspended
14 that was deposited on surfaces due to the
15 machining operations.

16 Then beginning in 1958 and later,
17 different kinds of uranium operations took
18 place.

19 I am not addressing those
20 operations. These are the operations that Joe
21 and folks have mentioned earlier regarding DU
22 powder, centering and a whole bunch of other

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1 different kinds of things that took place which
2 are a lot different than uranium machining.

3 And it's in that post-1958 time
4 period where you start to see a lot of air
5 sampling and bioassay data.

6 So, my report, this White Paper that
7 I just, you know, finished, focuses in
8 specifically on machining of uranium from 1950
9 to '55. And the residual period that went from
10 '55 to '58. And I stop at '58 because after
11 that everything changes and now you have
12 different operations and you do have bioassay
13 data and you do have air sampling data.

14 So, I wanted to sort of explain that
15 to all the interested parties that that's sort
16 of the framework we're working within.

17 Now, what NIOSH did, it said,
18 listen, when you look at TBD-6000, you have a
19 lot of options. What are we going to use for
20 the airborne dust loading, you know? Are we
21 going to assume, you know, what's the right air
22 dust loading to use that would be

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1 claimant-favorable, but applicable to the
2 kinds of operations that were taking place at
3 Kansas City Plant from 1950 to '55?

4 NIOSH elected to use the -- what I
5 say is the worst case scenario. They adopted
6 a dust loading around the order of 5,000 dpm per
7 cubic meter as being the chronic exposure that
8 all of these operators were involved in the
9 machining operation were exposed to
10 continuously 2,000 hours per year.

11 It's important to recognize that
12 when you look at -- and I have this all
13 summarized in the White Paper.

14 When you look at all of the data
15 that's out there on this very subject of
16 handling and machining of uranium, this is by
17 far the worst case scenario.

18 The reality is, in my opinion, I
19 believe that using that default surrogate dust
20 loading is probably a substantial
21 overestimate. It's plausible, but it's
22 probably an overestimate and the reason is

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1 this: Most of the operations that took place at
2 the Kansas City Plant were a lathing operation.

3 And the dust loading that was
4 selected from the matrix in TBD-6000, was the
5 dust loading that's associated with centerless
6 grinding which is a lot more -- it generates a
7 lot more dust. Perhaps a factor of 10.

8 So, I believe a default value that
9 was selected by NIOSH to apply to the operators
10 who were involved in the machining is likely to
11 be conservative. Certainly a plausible upper
12 bound.

13 If there is some bioassay data, Jim,
14 you're probably going to find -- my guess, you
15 know, and we'll find out, is that you'll see
16 that the bioassay data will show that that
17 probably is an overestimate by on the order of
18 perhaps a factor of ten.

19 That's my expectation, but my
20 takeaway from this is that the default value
21 selected is a good value.

22 Now, there's a little bit more to

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1 the story that is important that everyone
2 understands is that when you look into Harris
3 and Kingsley, which is the researchers that did
4 the original work that's the underpinning for
5 TBD-6000, you find out there's a lot of texture
6 to the matter that is when you're lathing, when
7 you're centerless grinding, when you're doing
8 these various operations with uranium, they use
9 oil to keep it cool. There are different
10 spinning rates that the lathes operate at.
11 There are ventilation hoods that may or may not
12 be there.

13 It's important to recognize that
14 the default value selected by NIOSH which is the
15 centerless grinding, had minimal controls to
16 reduce airborne dust loading.

17 When you look at -- and there's a lot
18 of -- by the way, in this particular report, a
19 lot of information is given regarding the
20 operation, the lathe operations that took place
21 more so, quite frankly, than I've seen in
22 perhaps a dozen other similar reports that I

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1 reviewed where they give you information on the
2 type of oil that was used, the quantity, a lot
3 of detailed information on the kinds of
4 operations that took place when they were
5 working the uranium.

6 And every indication is that there
7 were in fact place in these early years, and I
8 was surprised to see this in '50 to '55, a lot
9 of controls that were designed to reduce the
10 potential for airborne dust loading.

11 So, we've got two factors at work
12 here that would reveal to me that the 5,000 dpm
13 per cubic meter default dust loading is
14 probably a substantial overestimate and that is
15 one -- it was not centerless grinding. It was
16 a lathe operation which in itself has a much
17 lesser potential for dust loading.

18 And second, the operations
19 themselves made use of some technologies that
20 I would consider to be fairly advanced for the
21 time periods that we're talking about related
22 to cooling, ventilation and cutting speeds,

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1 that sort of thing, all of which is provided in
2 the documentation for this operation.

3 So, again, I take away from this
4 that the approach that NIOSH has adopted for
5 reconstructing the doses to operators in the
6 1950 to '55 time period is certainly
7 claimant-favorable perhaps by about a factor of
8 10 in terms of long-term chronic exposures to
9 these workers.

10 Now, some people have mentioned
11 earlier that, well, there could be spikes and
12 transients and the reality is these operations
13 -- there can be fires because the uranium could
14 combust. People -- there was dust generated
15 that settled. People swept that up generating
16 dust.

17 It turns out that we researched that
18 and it turns out that the Harris and Kingsley
19 research and the TBD-6000 capture that.

20 So, embedded in that 5,000 dpm per
21 cubic meter number, takes into consideration
22 the fact that you do on occasion might have some

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1 fires and you do have operations where you're
2 sweeping and generating excess dust, you know.

3 So, I believe on every level the
4 approach taken for reconstructing the doses
5 during that time period for the uranium
6 machining operation are scientifically sound
7 and claimant-favorable.

8 I will quickly go on to what I call
9 the residual period. Now, after they stopped
10 operations and this is sort of interesting,
11 what you want to do, you say, listen, we want
12 to reconstruct the doses to the workers who are
13 working there after those machining operations
14 stop, but there's still the residue on surfaces
15 that you -- that people could be exposed to.

16 You want to take that into
17 consideration and that covers the time period
18 from '55 or the end of '55 until 1958.

19 Now, the approach NIOSH used that we
20 referred to, the OTIB-70 approach, there's
21 something that was done -- this is what I'd like
22 to bring up before NIOSH and the Work Group.

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1 The approach used was the starting point
2 starting in I guess late 1955 or '56 when
3 machining operations stopped, you want to say,
4 okay, what is the airborne dust loading right
5 at the end of the machining operation in the
6 beginning of what we would call the residual
7 period.

8 Now, the approach NIOSH elected to
9 use to say, well, we're going to assume that the
10 dust loading toward the end of the machining
11 operations was at that upper end, this 5,000 dpm
12 per cubic meter, and that that dust is settling
13 at a rate of 0.00075 meters per second. That's
14 a good number. We've researched that number.

15 So, you can almost visualize the
16 stuff settling and NIOSH assumes that it
17 settles for 30 days and that it sort of achieves
18 some kind of equilibrium where at the time of
19 the end of machining operations and the
20 beginning of the residual period you've got
21 this dust layer on the surfaces that were
22 calculated that way, you know. You derive what

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1 the buildup is over that 30-day period.

2 I'd like to offer up a different --
3 and once you have that on the surface, then you
4 say there's a resuspension factor of 10 to the
5 minus five per meter.

6 We like the 10 to the minus -- in
7 fact the whole approach we liked, but I was
8 thinking about it. Why wouldn't you just start
9 with the airborne dust loading itself, the
10 5,000 dpm per cubic meter, as the beginning part
11 rather than go through the process of having it
12 settle out for 30 days, which there is some
13 uncertainty, you know, how long you will let
14 this stuff settle out, and the resuspension
15 factor of 10 to the minus five per meter as a
16 way to get to the airborne dust loading at the
17 beginning of the residual period, why not just
18 start with that dust loading as being -- that's
19 what the dust loading is at time zero of the
20 residual period.

21 So, I'd like to sort of leave in the
22 mind of NIOSH and the Work Group of why wouldn't

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1 that be a better approach? It's simpler, more
2 direct and has fewer assumptions embedded in
3 it.

4 I'm almost done and then we can talk
5 about that so this way we can see the whole
6 story.

7 What happens then is during the
8 residual period we all know that the airborne
9 dust loading is going to decline by natural
10 attenuation. I mean, they're not generating
11 anymore and little by little it's going away at
12 some rate because it's being resuspended and
13 it's being ventilated out and it's leaving.

14 So, and NIOSH did a very nice job and
15 we reviewed this very thoroughly on OTIB-70
16 that the rate of decline is 0.00067 per day.
17 That's the fraction of the airborne activity
18 that's going away per day. That's the slope.

19 And then so the exposure to a person
20 there would be the integral under that curve
21 from the end of '55 to 1958.

22 Now, what NIOSH did was they didn't

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1 use that approach. There are many options, by
2 the way, in OTIB-70 on how to come at this
3 problem.

4 What NIOSH said is, well, you know
5 what we'll do is we'll go all the way to 1958
6 and take a look at the airborne dust loading at
7 that time and say -- and so think of it like
8 this: You've got an estimate of the airborne
9 dust loading at the beginning of the residual
10 and at the end and you connect the dots and
11 you've got a slope.

12 Well, it turns out the slope is
13 flat. Doesn't go down. And that doesn't make
14 sense. And I think it doesn't make sense for
15 the following reason. I hope everybody is
16 following the story, because it's interesting.

17 What NIOSH did is in the 1958 data
18 which was collected just prior to the start of
19 the new operations, the other uranium
20 operations, is they picked the highest dust
21 loading.

22 So, I think they substantially

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1 overestimated what the airborne -- what the
2 average airborne dust loading was in the air in
3 1958, the end of the residual period because
4 they picked the highest number.

5 So, all of a sudden it appears when
6 you look at the slope, that you start at a given
7 concentration and it really doesn't go down.
8 It stays flat. And that would say to yourself,
9 well, something doesn't look right, the numbers
10 should be going down.

11 I think the numbers are not going
12 down because the conservative assumption made
13 regarding what the airborne dust loading was at
14 the end of the residual period.

15 To me, I would have taken an
16 approach that said, let's start the residual
17 period with the 5,000 dpm per cubic meter and
18 allow it to decline at 0.00067 per day, or
19 alternatively use the average airborne dust
20 loading observed in 1958 prior to the start of
21 the other uranium operations.

22 So, I think from a scientifically --

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1 from a scientific point of view, I think that
2 is a simpler strategy and seems to make more
3 sense as applied to this class of problem.

4 I believe it's certainly a
5 tractable problem. In my opinion, it is not an
6 SEC issue, but I do think a little more thought
7 could be given to maybe there's a better way to
8 come at the problem that more realistically
9 represents what might have taken place during
10 the residual period. And that's my story.

11 CHAIR BEACH: John, this is Josie.
12 Did you address the post-DU operational period
13 from '79 to 1984?

14 DR. MAURO: Not at all. Not at all.

15 CHAIR BEACH: Not at all?

16 DR. MAURO: My -- think of it like
17 this. My mission was look at the use of
18 TBD-6000 as a surrogate for your approach in
19 dealing with the 1950 to 1955 machining
20 operations. There was no data. No bioassay
21 or air sampling data.

22 And also for the residual period

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1 that -- the residual uranium from 1955 to '58,
2 it's not there.

3 I did not move on and look at the
4 period where different kinds of uranium
5 operations took place and where you do have
6 considerable bioassay and air sampling data.
7 I did not look at that.

8 So, my report, my White Paper only
9 addresses, I would say, would be the uranium op
10 exposures that occur from 1950 up to 1958.

11 CHAIR BEACH: Okay. Understand.
12 And this paper, is anybody reviewing it now, or
13 is it with Nancy also?

14 DR. MAURO: It's been with Ron. Ron
15 has reviewed it.

16 CHAIR BEACH: Ron's got it, okay.

17 DR. MAURO: And he has come back with
18 comments and we are working them out.

19 CHAIR BEACH: Okay.

20 DR. MAURO: And, Joe, I think we're
21 in the home stretch on this one also.

22 MR. FITZGERALD: Yes, within a week

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1 or two. Just this '79 to '84 as I recall, and
2 I don't have the ER right in front of me, but
3 was that a TBD-6000 treatment of the residual
4 period post-DU operation?

5 MR. McCLOSKEY: '79 to '84. '79 is
6 when we say mag-thorium machining op stopped.

7 CHAIR BEACH: Uh-huh.

8 MR. McCLOSKEY: And at that point, we
9 tried settling and resuspension, I believe, and
10 that doesn't get us a favorable number. And
11 so, we go back to keeping the airborne
12 concentration from the engineered control
13 limit consistent throughout the time frame.

14 And Mutty would like to address
15 John's concern about why don't we stick with
16 Battelle 6000 airborne generating value
17 instead of settling and resuspending.

18 It speaks to -- it needs to resemble
19 true operations, I think is the point. Do you
20 want to go ahead and elaborate, Mutty?

21 MR. SHARFI: Sure. This is Mutty
22 Sharfi. The reason why even in 6000 that they

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1 settle operational -- or air concentrations for
2 a non-operational period is if you took the
3 operational period, the source term is really
4 changing. You're going from airborne
5 concentrations associated with operational
6 source terms to airborne concentrations
7 related to just pure resuspension of materials.

8 So, you would expect once
9 operations stopped, to see, you know, kind of
10 a stair step drop to a new, you know, a new
11 baseline and then you start from the new
12 baseline.

13 So, though, using the operational
14 period, the bounding can be done, I guess, as
15 an extreme case. Generally you prefer to
16 calculate what the proposed operational
17 situation will look like and then resuspend
18 that because really your only source term at
19 that point, resuspending contamination is not
20 new dust created from operations.

21 DR. MAURO: I understand and I cannot
22 disagree with that. It would be interesting to

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1 see how different they are.

2 DR. NETON: John, this is Jim. I
3 just did a back-of-the-envelope calculation.
4 If you believe the 10 to the minus five number,
5 you have to have something like 500 million dpm
6 per square meter of your --

7 DR. MAURO: So, it's just plausible.

8 DR. NETON: It's just not plausible.
9 I mean, I don't know how many grams per square
10 meter that is, but it would be a veritable
11 pillow of uranium laying on the ground.

12 MR. McCLOSKEY: Something to trip
13 over.

14 DR. NETON: Yes. So, it just
15 doesn't seem like a plausible number if you
16 believe the 10 to the minus five.

17 DR. MAURO: It was something that I,
18 you know, I wanted to talk about as a Work Group
19 and know the strategy, but, no, certainly as you
20 know from reviewing notes of the '70s
21 comfortable with the 10 to the minus five
22 approach to coming up with the airborne dust

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1 loading at the beginning of the period.

2 The only question we raise, if you
3 remember, was that the time period that it
4 accumulated, the 30 days.

5 But as you know when we reviewed
6 that, you know, we came pretty close. I think
7 we came up with 50 days being the number.

8 DR. NETON: Right.

9 DR. MAURO: But I, you know, I don't
10 want to quibble over something that's -- that
11 doesn't really -- these are Site Profile
12 issues.

13 DR. NETON: Right.

14 DR. MAURO: And what you just
15 described to me certainly is a compelling
16 argument of why you would not start with the
17 5,000.

18 CHAIR BEACH: All right, Joe. I was
19 getting confused with all the different dates
20 and jumping back and forth. So, it looks like
21 we've got the mag-thorium issue in with this.
22 It needs to be split out.

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1 MR. FITZGERALD: We'll clarify on
2 this. This is a little confusing with the
3 thorium and the uranium together. There's two
4 residual periods we're citing. '79 to '84 is
5 the thorium.

6 DR. NETON: It kind of runs parallel
7 for a little while.

8 MR. FITZGERALD: So, I think it would
9 be clearer to have thorium on one, and uranium
10 on the other just to keep it straight.

11 CHAIR BEACH: And on this one, so
12 actions would be to clarify this. You're going
13 to get the review from John on 6,000. The Work
14 Group will again have a chance to look at it at
15 the same time you're looking at it. And then
16 we'll go from there, I would say.

17 MR. DARNELL: By this one, you mean
18 Issue 16?

19 CHAIR BEACH: Issue 16, yes. Sorry.

20 DR. NETON: We need to look at that
21 report when it comes out.

22 CHAIR BEACH: Yes. Well, you need

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1 to look at both the reports that John just cited
2 since it's not at the table.

3 DR. MAKHIJANI: Josie.

4 CHAIR BEACH: Yes.

5 DR. MAKHIJANI: This is Arjun.

6 CHAIR BEACH: Hi, Arjun.

7 DR. MAKHIJANI: Sorry I'm a little
8 late in commenting on the magnesium-thorium.
9 I had my own phone on mute and I was playing with
10 *6.

11 CHAIR BEACH: Oh, okay.

12 DR. MAKHIJANI: I just had a question
13 for John about his -- about part of his
14 presentation on the daughter products.

15 John, I think you're right for most
16 of the organs, but as I see the dose conversion
17 factors for lung, I think the degree of
18 equilibrium would make a huge difference
19 because the dose conversion factor for
20 thorium-238 for lung is about six or seven times
21 bigger than the dose conversion factor for
22 thorium-232, for Type M and, you know, the

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1 particulars are different.

2 DR. MAURO: Arjun, you are bringing
3 forth -- you are correct. When I made my
4 scoping calculations to see if these other
5 radionuclides might be important, I simply
6 compared the effective whole body dose. I did
7 not do it by organ.

8 DR. MAKHIJANI: Yeah.

9 DR. MAURO: So, you bring up a good
10 criticism that maybe we should be looking at are
11 there any -- if the other radionuclides were
12 there in equilibrium, would the -- I only looked
13 at in terms of the effective whole body dose as
14 a metric just to get a handle on it, but you're
15 right. It would be a good idea to actually work
16 that through to the different organs to
17 convince yourself that we're
18 claimant-favorable. Very good point.

19 DR. MAKHIJANI: Well, you know,
20 actually the program works on organ doses. So,
21 EDE is actually not the right measure.

22 DR. MAURO: No, I -- keep in mind that

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1 NIOSH's report is silent on this. And when I
2 got to this part on my White Paper, I said, well,
3 let me just convince myself that by ignoring the
4 progeny -- my main interest is radium-228, by
5 the way.

6 DR. MAKHIJANI: Yes.

7 DR. MAURO: Is there a problem? So,
8 I went ahead and just did this simple
9 calculation, but I think you're right.

10 I think it's -- and NIOSH can
11 certainly weigh in. It's worth looking into.
12 Is it possible that there might be -- the
13 thorium-228 is present there in substantial
14 quantities? Could that have a substantive
15 effect on your ability on bounding the doses?
16 I just can't answer that question right now, but
17 I think it's worth looking into.

18 DR. MAKHIJANI: Yes, actually, John,
19 you are right about thorium -- radium-228. The
20 progeny that's important and I look at these
21 numbers and I certainly can't see all of them
22 at the same time, but it's thorium-228 and

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1 especially for the lung dose.

2 DR. MAURO: Well, yes, thorium-228
3 is going to be there. I mean, when you separate
4 the thorium and make your mag-thorium, you're
5 going to get both probably at least initially
6 in equilibrium.

7 And the thorium-228 is going to go
8 away with a 1.91 year half-life. So, it's
9 gradually going to go away, but of course it's
10 gradually going to be replaced.

11 So, in theory one could argue that
12 if there's a substantial -- now, I didn't check
13 your dose conversion factors for the lung, but
14 you're saying that the thorium-228 lung dose
15 conversion factor is substantially higher than
16 the thorium-232?

17 DR. MAKHIJANI: Yes, well, I have it
18 in front of me. The Type M thorium-228 dose
19 conversion factor for lung inhalation Type M is
20 1.81 times 10 to the minus four. And for
21 thorium-232, let me bring it up so I'm accurate
22 for the record here, is 2.71 times 10 to the

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1 minus five. So, it's about a factor of six or
2 seven higher.

3 DR. MAURO: Okay. Well, it's
4 certainly something worth developing and
5 presenting for completeness.

6 DR. NETON: Yes, John, I don't know
7 that we intended that we would assign just pure
8 thorium-232 intakes. I mean --

9 DR. MAURO: Yes. Yes, I would agree
10 that you can come up with some factor that would
11 be claimant-favorable.

12 I just don't -- but it would make a
13 significant difference for some claimants.
14 So, I think it should be looked at.

15 DR. NETON: Yes, there's a number of
16 ways to look at it.

17 DR. MAURO: Yes.

18 DR. NETON: I mean, they kept the
19 bounding estimate in terms of gross alpha
20 concentration. So, then if the gross alpha
21 concentration is based on a mixture, then the
22 thorium is lower than what we're saying and

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1 there's many different ways one can look at this
2 problem.

3 DR. MAURO: I know it is I think in
4 simplest terms, right now the SEC Petition
5 Evaluation Report is silent on this issue.

6 DR. NETON: Right.

7 DR. MAURO: And it leaves you with
8 the impression that you're simply going to go
9 with the nine times 10 to the minus 11
10 microcurie per cc thorium-232 and -- but
11 nothing is really said about the points that
12 Arjun is just making.

13 I know I did what I did to convince
14 myself, oh, that's okay, but it wouldn't hurt
15 to look into that a little more.

16 DR. NETON: Yes, I agree. So,
17 whether you write it into your report and we
18 address it then or we address it on the side,
19 I don't know. Whichever way you want to do
20 that.

21 MR. FITZGERALD: I think put it in
22 the report.

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1 CHAIR BEACH: I was just going to
2 suggest that.

3 DR. NETON: Great.

4 MR. FITZGERALD: That would make it
5 easier all the way around.

6 DR. NETON: So, let's just delay the
7 report a little bit. That's fine.

8 DR. FITZGERALD: Yes. Is that
9 feasible, John?

10 DR. MAURO: Oh, absolutely. Sure.
11 This is straightforward stuff.

12 MR. FITZGERALD: That was a hard one,
13 right?

14 CHAIR BEACH: All right. So,
15 actions. Anybody else on 16, Issue 16?
16 Actions I have are SC&A to separate out this
17 issue to clarify them a little bit more.

18 MR. FITZGERALD: We'll make 16
19 uranium, and make 13 mag-thorium.

20 CHAIR BEACH: Mag-thorium totally.

21 MR. FITZGERALD: Yes.

22 CHAIR BEACH: Okay. And then NIOSH

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1 to review SC&A's White Paper when it comes out
2 and to the Work Group also. I think that's all
3 I have there.

4 Okay. So, let's go to 14.

5 MR. FITZGERALD: Yes, on 14 I think
6 this is one we raised for Brookhaven and some
7 of the others -- Lawrence Berkeley -- just
8 scrutinizing the cutoff point.

9 In this case, it was based on the
10 implementation of 835 and not pre-judging it.
11 We just want to look at the evidence to more or
12 less ascertain or validate that the management
13 of the program in fact tracked with the timing
14 that's suggested there.

15 And we have not seen anything that
16 would contradict that, but that's part of what
17 we're going to be looking at is looking at what
18 data is available and seeing if anything would
19 contradict that.

20 At some sites the implementation,
21 you know, obviously lagged by in some cases a
22 few years. Even though there was an

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1 enforcement of 835, it didn't happen instantly
2 on the -- I wish it did, having lived through
3 that, but there's a lag. So, we just wanted to
4 look at that and that's pretty much what's here.

5 Now, I read the response and that's
6 certainly fine. I mean, I think we're all
7 saying, you know, it's not going to be crystal
8 clear, necessarily. But if there's any
9 evidence to the contrary, the it sounds like
10 you're flexible to judge that on its merits and
11 that's fine. That's where we are, too.

12 MR. McCLOSKEY: Definitely. This
13 is something I remember you asking Brent about
14 while we were there and --

15 MR. FITZGERALD: Yes, it's getting
16 to be ancient history surprisingly enough. I
17 guess that's a sign of aging and --

18 MR. McCLOSKEY: 20 years ago.

19 MR. FITZGERALD: Yeah, 20 years
20 already. So, you know, I don't know -- he was
21 there, but I think he just couldn't recollect,
22 you know, what the process was to put that

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1 program fully in place.

2 And I think the fact that they were
3 in pretty good shape with the rad-con manual
4 sort of indicates that they weren't in bad shape
5 necessarily. So, this might bear out as far
6 as, you know, when they actually made the big
7 change.

8 MR. DARNELL: So, do we close this
9 issue with the understanding --

10 CHAIR BEACH: That's what I was going
11 to say. It's kind of a placeholder, but --

12 MR. FITZGERALD: It's a placeholder
13 and I don't -- either way. It's up to the Work
14 Group. I mean, I, like I said, I think it's a
15 placeholder in the sense that we would want to
16 continue to look for any evidence that would
17 suggest that implementation lags and --

18 MR. DARNELL: That's actually the
19 same on any issue that we are to come up with.
20 Even after we close and if we find something
21 new, we reopen it.

22 CHAIR BEACH: Right.

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1 MR. DARNELL: So, and that would be
2 the case with this also.

3 MR. FITZGERALD: It can go either
4 way. I'll leave it to the Work Group. I don't
5 have any strong feelings --

6 CHAIR BEACH: Work Group, what's
7 your pleasure?

8 MEMBER CLAWSON: Well, myself, I'd
9 rather just keep kind of this in place, you
10 know, it's --

11 CHAIR BEACH: I guess I'm kind of, of
12 the mind that we could close it. But if we're
13 going to do a lot of data capture in the next
14 several months, the next Work Group meeting if
15 there's nothing more to add to this one, we can
16 go ahead and close it at that time.

17 MR. FITZGERALD: I guess my thought,
18 too, and working on the Los Alamos SEC, I
19 thought that was kind of a straightforward
20 question as well, but just trying to come up
21 with any demonstrable, you know, evidence that,
22 you know, things happen. It's just taking a

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1 lot more --

2 DR. NETON: But Los Alamos is a lot
3 more varied site.

4 MR. FITZGERALD: Yes, it is.

5 DR. NETON: Here we have a single
6 operation.

7 MR. FITZGERALD: So, I'm thinking
8 this would be straightforward and hopefully it
9 will be --

10 MR. DARNELL: A little bit more
11 straightforward.

12 MR. FITZGERALD: Yes.

13 MR. DARNELL: And I don't think you
14 can call this issue really straightforward with
15 any site no matter how simple the site is except
16 to say that, you know, we think we're done with
17 it and -- but if anything else comes up, well
18 -- like anything else, we'll --

19 MR. FITZGERALD: I guess my thought
20 is, you know, when you hang something on a
21 compliance date, there's sort of a built in
22 assumption that they abided and the program

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1 followed the management direction, but --

2 CHAIR BEACH: Or it took a couple
3 years to catch up.

4 MR. FITZGERALD: I was just looking
5 at, you know, okay, what was the actual, you
6 know, when did they actually --

7 MR. McCLOSKEY: Well, Joe, beyond
8 the, you know, just beyond the date that 10 CFR
9 835 was implemented complex-wide, we also
10 provided an SRDB reference that talks about
11 audits that were performed on site --

12 MR. FITZGERALD: Right.

13 MR. McCLOSKEY: -- and that they
14 speak specifically about the process of
15 implementation there and how far along they
16 were.

17 And it appeared pretty
18 comprehensive before the end of '93, that they
19 had it implemented except for a few small or
20 non-dose-related issues such as, you know, the
21 wording on the high radiation sign was not
22 compliant with the one that's in the manual.

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1 There were two findings within that audit.

2 And so, yes, you might find post-'93
3 a few follow-on audits that will have some, you
4 know, hits identified.

5 MR. FITZGERALD: Right.

6 MR. McCLOSKEY: I think we can say
7 largely before the end of '93 that they had a
8 pretty good implementation of 10 CFR 835 and
9 we've produced in the SRDB documents that speak
10 to that.

11 MR. FITZGERALD: I'll leave it to the
12 Work Group. I mean, I think again that was the
13 reason that was raised. And if this, you know,
14 I think the documentation that NIOSH can
15 provide is sufficient, it's a judgment call.

16 CHAIR BEACH: So, I heard from Brad.
17 He'd like to keep it open. I don't think it
18 hurts to keep it open until the next Work Group
19 meeting.

20 Mr. Lockey, what's your thought?

21 MEMBER LOCKEY: I'm okay to keep it
22 open.

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1 CHAIR BEACH: Okay. John, the same?
2 We'll just go ahead and keep it open and maybe
3 SC&A would want to look at those SRDBs that are
4 cited there and report out on it at the next Work
5 Group meeting.

6 All right. 15, the thorium oxide
7 operations. Finishing up Action Item 15.

8 MR. FITZGERALD: Yes, on thorium
9 oxide, you know, I think the understanding from
10 the ER was there were laboratory quantities
11 being handled. And I think we've verified that
12 in our interviews onsite.

13 The real question I have is having
14 looked at the NMMSS Inventory trying to make
15 heads or tails of some of the references there
16 where so-called non-alloy thorium was cited in
17 kilogram quantities, I don't know what that
18 means.

19 I guess I'll be the first to say it,
20 you know, just the fact that it's listed doesn't
21 necessarily mean --

22 MR. DARNELL: I actually know what it

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1 means and we can't --

2 MR. FITZGERALD: Okay.

3 MR. DARNELL: -- talk about it.

4 MR. FITZGERALD: Okay. Well, I
5 would want to know more about it in order to feel
6 that, you know, that we're, you know, whether
7 the references are adequate and, therefore, can
8 be addressed by the dose reconstruction method.

9 MR. McCLOSKEY: Well, I remember
10 when Joe Porrovecchio was in the room and Nelson
11 gave us the spiel on it. He even concluded
12 toward the end of that --

13 MR. FITZGERALD: Right.

14 MR. MCCLOSKEY: -- that, you know,
15 we would all be looking for a dose pathway. And
16 he even agreed with my assessment when I heard
17 it from the previous visit that I didn't really
18 see a dose pathway there, the material that
19 we're not allowed to talk about, you know.

20 So, I mean, that's been shaken down
21 somewhat.

22 MR. FITZGERALD: Okay. Well, I'm

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1 saying we're not quite done with that.

2 MR. McCLOSKEY: Sure.

3 MR. FITZGERALD: I want to -- for the
4 years, we have the years I think pretty much
5 from the inventory. I want to just chase that
6 down a bit more.

7 MR. DARNELL: I think what we can say
8 is the material was not machined. Its form was
9 not changed.

10 MR. FITZGERALD: Right. Right.

11 MR. DARNELL: And there was no
12 breaking of the material that would cause a
13 release of thorium. That's really all I can
14 say.

15 MR. FITZGERALD: Right. I also want
16 to look at the incident reports that hopefully
17 will be able to identify the weeklies and --

18 MR. DARNELL: If there was incident
19 reports with that stuff, it would be really
20 strange.

21 MR. FITZGERALD: Well, like I said,
22 I'd want to take a look at those as well for the

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1 years -- since we have the years, we actually
2 could look at those and confirm that there was
3 nothing.

4 MR. McCLOSKEY: Joe, on your NMMSS
5 summary here you have like kilograms, plural,
6 at the top of the deuterium.

7 MR. FITZGERALD: Right.

8 MR. MCCLOSKEY: And kilogram,
9 singular, in the bottom three rows.

10 Is there any significance to that?

11 MR. FITZGERALD: Yes, I didn't want
12 to get into year-by-year -- not to mention it
13 would have taken a lot longer into the exact
14 amount. Kilograms, more than one.

15 MR. McCLOSKEY: Okay.

16 MR. FITZGERALD: And they actually
17 do list a very specific amount. The site had
18 to report a specific amount. So, I thought it
19 was just significant that it was certainly
20 kilograms of material.

21 CHAIR BEACH: Okay. So, action item
22 for SC&A wants to review source further and

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1 incident reports on that one.

2 Anything else on 15?

3 MR. FITZGERALD: More so because we
4 have years where it was acknowledged to be on
5 site.

6 CHAIR BEACH: Uh-huh, yes.

7 MR. FITZGERALD: So, it gives us some
8 lead to look at both the weekly summaries as
9 well as some other information. That's pretty
10 much it.

11 CHAIR BEACH: Okay.

12 MR. McCLOSKEY: Well, Bill Frede
13 produced some documents on thorium oxide. I
14 don't know where they are.

15 CHAIR BEACH: Okay.

16 MR. McCLOSKEY: That was the whole
17 exchange of documents through --

18 CHAIR BEACH: That was during our
19 visit?

20 MR. McCLOSKEY: And so, that might be
21 worth -- and they're on his computer now.
22 Remember he said, come on over and --

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1 CHAIR BEACH: Oh, those were the ones
2 that we're not sure what happened to.

3 MR. McCLOSKEY: Yes. And so I think
4 --

5 CHAIR BEACH: Bill Frede?

6 MR. McCLOSKEY: Frede, F-R-E-D-E.

7 CHAIR BEACH: Okay.

8 MR. McCLOSKEY: And, you know, we
9 could easily call him up and say, send them
10 through Nelson again, we need them, we lost
11 them.

12 MR. FITZGERALD: Yes, we might have
13 to.

14 MR. McCLOSKEY: They might speak to
15 this as well.

16 CHAIR BEACH: Well, they're not
17 lost. They're just misplaced. They're in
18 some file, yes. Okay. So, a little more work
19 to do there.

20 MR. FITZGERALD: Not a lot of work.

21 CHAIR BEACH: No, a little work.

22 MR. FITZGERALD: I just think -- I

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1 think we've actually done a lot of spade work
2 on it.

3 CHAIR BEACH: Yes.

4 MR. FITZGERALD: Just enough to put
5 it to bed.

6 CHAIR BEACH: Okay. Let's go to 17.

7 MR. DARNELL: I like it because NIOSH
8 isn't on the hook.

9 CHAIR BEACH: No, no. You're not on
10 the hook this time. Don't worry. You've got
11 enough to do.

12 MR. FITZGERALD: On D&D, that simply
13 was, you know, there was a statement in the ER
14 that we're looking at D&D confined to '84-'86.
15 And we wanted to spend time particularly in an
16 onsite visit validating that D&D was in fact so
17 limited and we didn't see anything that would
18 contradict that per se.

19 We actually did a fair amount of
20 interviews that focused around that time period
21 when Rockwell did the D&D.

22 What I'd be interested in is not the

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1 D&D with capital letters, but the d&d with small
2 letters.

3 CHAIR BEACH: Small letters.

4 MR. FITZGERALD: And I think that
5 would be accessible maybe through --

6 MR. DARNELL: You're talking about
7 the machines, the D&D?

8 MR. FITZGERALD: No, just --

9 CHAIR BEACH: Possibly, for me.
10 Sorry.

11 MR. FITZGERALD: I wasn't going to
12 say that, but okay. But, you know, just
13 looking at D&D, that would be of a lesser degree
14 that was occurring during the history of the
15 plant and the implications of that.

16 We heard a little bit about it with
17 cleaning up the machines, but I think we'll see
18 more of it in some of the weekly reports.

19 CHAIR BEACH: Yeah, we don't really
20 know a lot about the D&D.

21 MR. FITZGERALD: Well, I think we
22 know a lot about '84-'86. I think it would be

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1 helpful to know a little bit more about the
2 second level down-type cleanups that were going
3 on unless there were none which I --

4 MR. DARNELL: Which that would be a
5 grand statement as far as the amount of
6 radioactive material at the site is if we see
7 no other D&Ds in those weekly reports.

8 CHAIR BEACH: Well, like this in '64
9 it says, D22 radiation area, several machines
10 in this area have been decontaminated and
11 removed. And in the near future another lathe
12 and another mill will come out of this area as
13 well.

14 So, there was small -- those are the
15 small type of D&D activities I guess we want to
16 run to ground a little bit more.

17 MR. McCLOSKEY: We do reference one
18 in the ER and it occurred in '71 or two at the
19 end of the DU machine ops.

20 CHAIR BEACH: Yes. But then we've
21 also heard from petitioners that they were
22 moving things, too. And so, you know, just

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1 want to have a better understanding of that and
2 what kind of D&D did they -- did they just blow
3 it off or did they, you know.

4 MR. DARNELL: But you have to
5 remember there's a difference between
6 decontamination and decontamination and
7 decommissioning.

8 CHAIR BEACH: Sure. Sure. I
9 understand that.

10 MR. FITZGERALD: I think one thing
11 that was pretty clear that in terms of a
12 facility, classic facility decommission
13 decontamination, I think '84-'86 stands out.

14 CHAIR BEACH: Yes.

15 MR. McCLOSKEY: Right.

16 MR. FITZGERALD: I don't think we've
17 seen anything or found anything that
18 contradicts that. So, I'm not particularly
19 concerned about that, but probably want to
20 still verify a bit more.

21 CHAIR BEACH: Oh, sure.

22 MR. FITZGERALD: I don't think

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1 anybody actually said no and what about the you
2 know, 1972 one, you know. Nothing like that
3 came up.

4 CHAIR BEACH: Yes.

5 MR. DARNELL: The only other thing
6 that came up was when we talked about taking
7 down the machines.

8 MR. FITZGERALD: For the machines
9 themselves, right.

10 MR. DARNELL: It's definitely
11 something we need to look into just to verify
12 in the weekly reports. It's when we do those
13 reviews and --

14 MR. PORROVECCHIO: Yes, this is Joe
15 Porrovecchio.

16 CHAIR BEACH: Hi, Joe.

17 MR. PORROVECCHIO: The (name
18 redacted) record had a fantastic map
19 identifying the physical location of equipment
20 and sources at a point in time that was used in
21 that case. And that's the kind of thing that
22 would really help us locate operations and

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1 activities that we should be tracking down when
2 we look at the activities reports.

3 CHAIR BEACH: Joe, remind me --

4 MR. PORROVECCHIO: We had an
5 investigation that happened maybe every ten
6 years or so, relocation of equipment and where
7 things stood similar to the way in which (name
8 redacted) record produced it.

9 CHAIR BEACH: Joe, remind me what
10 dates that map was that as produced for that
11 (name redacted) --

12 MR. PORROVECCHIO: I think it
13 covered the 1954 time period. And I think the
14 case was closed in '57.

15 I'm not positive, but that's what I
16 recall.

17 CHAIR BEACH: And you were thinking
18 mapping for what years would be helpful?

19 MR. PORROVECCHIO: Well, at a
20 decade's level from '57 when that (name
21 redacted) case was over, maybe what was the
22 situation ten years after that and following

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1 just so that we could, you know, close the loop
2 and have a real good understanding physically
3 what went on at the facility.

4 When a department changed location
5 and activities so often, that happens.

6 MR. McCLOSKEY: Wasn't that
7 something you tagged for retrieval?

8 MR. PORROVECCHIO: Yes, I did. It's
9 something that will be copied.

10 CHAIR BEACH: So, is that something
11 that NIOSH could do?

12 MR. PORROVECCHIO: Absolutely. I
13 think they have --

14 MR. DARNELL: People are already --

15 MR. PORROVECCHIO: -- looking for
16 investigative records of interviews and work at
17 the site to be able to do that certainly faster,
18 more expeditiously than we can, but we can do
19 that also.

20 CHAIR BEACH: I think --

21 MR. PORROVECCHIO: I'd much rather
22 NIOSH take the shot at that first.

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1 CHAIR BEACH: Yes, I think I was
2 asking NIOSH, Joe, when you answered, and I
3 think so NIOSH is already working on that.

4 MR. DARNELL: We're already working
5 on that.

6 CHAIR BEACH: So, it's kind of like
7 a roadmap without saying that word from Mound,
8 but --

9 MR. DARNELL: Well, we've been
10 collecting maps as we've been going along --

11 CHAIR BEACH: Yes.

12 MR. DARNELL: -- because areas have
13 changed. Pat has some of them. We haven't
14 received all of them yet.

15 MR. McCLOSKEY: The other ORAU team
16 that was there with us in May was there
17 primarily for that purpose to get maps.

18 CHAIR BEACH: Oh, okay. So, we may
19 see something from the '57 to '70 time frame of
20 -- okay. That would be helpful.

21 MR. DARNELL: And we're actually
22 hoping, you know, as early in operations as

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1 possible through.

2 CHAIR BEACH: Yes, it sounds like we
3 already have a pretty good one from '58.

4 MR. DARNELL: Mid '50s.

5 CHAIR BEACH: '58 to -- or '54 to '57,
6 yes. I think that (name redacted) one hit '54.

7 MR. FITZGERALD: But that was
8 requested.

9 CHAIR BEACH: Yes. Joe tagged it.
10 So, we should see that. That was a good map.
11 Maybe we can reproduce it on a smaller level so
12 we can send it around.

13 MR. DARNELL: I don't know how useful
14 it would be at a small level, because there's
15 just so much information.

16 CHAIR BEACH: Well, we could
17 possibly bring it to Work Group meetings.
18 Okay. So, that's an action ongoing item, Joe.
19 That's for reminding me. I had forgotten about
20 that (name redacted) map.

21 Anything else for D&D for Work Group
22 members of interest? Questions? I don't

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1 really have any actions per se on that one.

2 MR. FITZGERALD: That's ongoing.

3 CHAIR BEACH: Ongoing, yes.

4 MR. FITZGERALD: I think we've got a
5 good start. We got a good start in May, but I
6 think it's starting to develop.

7 CHAIR BEACH: Okay. So, 18,
8 accidents and incidents. Does anyone want a
9 break before we continue on or where are you
10 guys at?

11 MR. FITZGERALD: Yes, we were, you
12 know, beyond the erbium tritide, post-97
13 incident and '89 promethium, we were looking at
14 what body of records existed on incidents or
15 events onsite.

16 One focus was looking for any
17 evidence of fires or spills and we had not found
18 those.

19 There was some reference in the ER
20 that those -- that data might be in the
21 individual files. I think that was one comment
22 that was in there.

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1 And during the visit we did come
2 across the weekly activity reports and I think
3 that's what we want to focus on as far as trying
4 to review the event history for the site and see
5 what that can basically lend itself in part as
6 far as incidents.

7 And looking at the sampling we did,
8 that was just very rich. I mean, they
9 literally report everything that was happening
10 operationally from fires to who was exposed to
11 organic to who might have been exposed to
12 radiological exposures. A couple of those.
13 And it just seems like it would be a good way
14 to understand the operational history in terms
15 of what was the incidents.

16 So, I think that one I was feeling
17 less optimistic before the visit. But having
18 seen those weeklies, I think that's going to
19 help a great deal.

20 CHAIR BEACH: Okay.

21 MR. FITZGERALD: And we don't have
22 any issues or questions on the promethium. The

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1 two big ones have been cited. Certainly the
2 tritide and promethium. I think that was
3 pretty well covered.

4 CHAIR BEACH: And then we're moving
5 one action from three over to there.

6 MR. FITZGERALD: Yes.

7 CHAIR BEACH: And then the thorium
8 mag fires is captured. So, okay. All right.
9 Anybody else on 18?

10 19, potentially unmonitored
11 exposures.

12 MR. FITZGERALD: This is a
13 petitioner issue. And it was the one
14 petitioner issue we felt we wanted to lock down
15 to a greater extent.

16 And we understand NIOSH's position
17 that there was no evidence of verified
18 exposures to the source terms, but given the
19 list we thought we would take the opportunity
20 and validate and walk down that list.

21 And I think just based on the onsite
22 viewing and the records research, I think we

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1 have in fact were able to validate that no
2 plutonium, no weapons grade-235 or 233 were
3 present except in gram quantities in sealed
4 sources and maybe some isolated instances.

5 And we heard a couple of these, a
6 fugitive contamination on returns which is not
7 uncommon.

8 And on the external radiation
9 sources, again I think, and Ron spent some time
10 looking at that, I think we're also comfortable
11 with that.

12 Tritium obviously which we'll talk
13 about this new issue we're proposing, is a
14 slightly different issue. Just the sampling
15 on the microfilm we found certainly evidence
16 that tritium was being received in bulk
17 quantities and rebottled --

18 MR. DARNELL: Well, let's finish 19
19 before we discuss --

20 MR. FITZGERALD: Well, I know. I'm
21 just saying -- so, in any case, certainly for
22 tritium was one issue that we felt on this list,

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1 on the petitioner's list we needed to do further
2 research on that. So, that's kind of where it
3 is.

4 And we're looking -- I don't think
5 there's any disagreement we're looking for
6 verified exposures. I think that was the term
7 that's used in your response. And I think
8 that's the same criterion I think the Work Group
9 would be looking at.

10 MR. McCLOSKEY: And we will continue
11 looking for those regardless --

12 MR. FITZGERALD: Right.

13 MR. McCLOSKEY: -- of this issue.

14 MR. FITZGERALD: Right. So, I think
15 in general we're pretty satisfied except for
16 tritium --

17 CHAIR BEACH: Okay.

18 MR. FITZGERALD: -- that this is
19 covered.

20 CHAIR BEACH: So, everything on this
21 list other than tritium which we've now moved
22 to 20 --

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1 MR. FITZGERALD: Because I think --

2 CHAIR BEACH: -- is covered.

3 MR. FITZGERALD: -- it's an
4 activity all by itself.

5 CHAIR BEACH: Is there any reason to
6 not close this based on further data capture and
7 --

8 MR. DARNELL: Well, this is -- this
9 again goes back to that age-old question do we
10 close it out even though we know we're going to
11 be looking for this stuff anyways?

12 CHAIR BEACH: Right.

13 MR. McCLOSKEY: Yes, Pete, if we find
14 something --

15 MR. DARNELL: If we hear a rumor of
16 something, we're going to go track that rumor
17 down.

18 CHAIR BEACH: Yes, or it becomes a
19 new issue.

20 MR. FITZGERALD: Right.

21 CHAIR BEACH: So, okay. What's your
22 pleasure, Work Group? Close?

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1 MEMBER LOCKEY: Close it.

2 CHAIR BEACH: Okay. With the --
3 knowing that we moved tritium to Number 20.
4 Okay. So, this one can be considered closed.

5 All right. Let's move on to 20.

6 MR. FITZGERALD: Now tritium.

7 CHAIR BEACH: Now.

8 MR. FITZGERALD: Now tritium.

9 CHAIR BEACH: And just before you
10 start, Joe, understand for the Work Group if you
11 look under -- which one is it?

12 MR. FITZGERALD: And that's a pretty
13 good summary. I guess I won't even --

14 CHAIR BEACH: If you look at Number
15 8, that summary should be under Number 20.

16 MR. DARNELL: So, we're going to
17 combine Eight and 20?

18 CHAIR BEACH: No.

19 MR. FITZGERALD: No.

20 CHAIR BEACH: Only your response
21 that actually should have fell under --

22 MR. FITZGERALD: Eight is tritides,

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1 but the tritium response was tacked on the end
2 of --

3 MR. DARNELL: Okay.

4 CHAIR BEACH: I just wanted the Work
5 Group to remember where that response was.

6 MR. FITZGERALD: Right.

7 DR. NETON: We generated a response
8 prior to your adding 20. We wanted to make sure
9 --

10 (Laughter.)

11 (Simultaneous speaking.)

12 MR. FITZGERALD: Yes, it didn't seem
13 to fit very well in that one. So, in any case,
14 though, and I thought the extracted summary was
15 a good one.

16 Looking at these microfilm weeklies
17 for mid-'64 for no other reason than it just
18 happened to be on that roll --

19 MR. DARNELL: Hundreds of small
20 bottles of tritium.

21 MR. FITZGERALD: Yes, you know, 200
22 plus bottles of -- four-ounce bottles of

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1 tritium were being filled from an eight-gallon
2 I think -- yes, from Los Alamos.

3 I said, well, that's interesting.
4 I had no other idea they, you know, clearly
5 compartmentalized it so they wouldn't discuss
6 what it was being used for.

7 And I think the one piece of -- I
8 guess it was a document that you all had cited,
9 it gives you a clue. And I would like to
10 connect the dots and see if that was -- what was
11 the phosphors? I think it was phosphors? Was
12 it tritiated phosphors? Tritiated phosphors
13 was something that Kansas City was dabbling in.

14 MR. DARNELL: Prepared a tritiated
15 phosphor --

16 MR. FITZGERALD: Right.

17 MR. DARNELL: -- within an exhaust
18 fan.

19 MR. FITZGERALD: And it was the same
20 time frame, roughly. So, it's suggestive of --
21 that was the '60s too.

22 CHAIR BEACH: It's mentioned five or

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1 six times within a three-month time period of
2 what you captured.

3 MR. FITZGERALD: '68.

4 CHAIR BEACH: '68.

5 MR. FITZGERALD: And this is '64.
6 So, that's a possibility that they were doing
7 that.

8 And the memos that were going back
9 and forth on that with Bendix suggested that
10 certainly they were doing that later.

11 So, this might in fact be the source
12 of the tritium that was being used for that.

13 Why were they filling up hundreds of
14 bottles? I don't really know. I don't know
15 what the process was.

16 MR. DARNELL: It looks like
17 something they were doing for Sandia.

18 MR. FITZGERALD: Maybe.

19 MR. DARNELL: For some reason.

20 MR. FITZGERALD: They were
21 reflective enough though to ask Sandia for
22 procedures on doing bioassays and setting up a

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1 bioassay program.

2 At least we'll think that if they
3 can carry it through, then there very well may
4 be some bioassay records.

5 DR. NETON: We don't have any tritium
6 bioassay.

7 MR. DARNELL: That's part of the
8 bioassay we're going after in the medical
9 records.

10 DR. NETON: What year was this?

11 MR. DARNELL: '64.

12 MR. FITZGERALD: '64 is when it
13 started.

14 CHAIR BEACH: Started in --

15 MR. FITZGERALD: Don't know when it
16 stopped.

17 CHAIR BEACH: Well, we don't know --

18 MR. DARNELL: And we actually don't
19 know when it really started. It sure looks
20 like it did, but there's nothing that says in
21 what little bit we have.

22 MR. FITZGERALD: You got the big

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1 bottle and you got the little bottles and --

2 MR. DARNELL: But we don't have the
3 pouring yet.

4 MR. FITZGERALD: We don't have the
5 pouring yet, but the big bottle arrived. It's
6 sort of like you're looking at weeklies and you
7 get to the point where the big bottles arrive
8 and they have those little bottles ready. So,
9 it's like, you know, probably did happen.

10 MR. DARNELL: When Pat and I
11 calculated it, mainly Pat. What's the dose
12 consequence of the -

13 MR. FITZGERALD: Tritiums.

14 MR. DARNELL: And Pat came up with,
15 what is it, 450 -

16 MR. FITZGERALD: Right. Not much.

17 MR. DARNELL: Yes. 455 millirem --
18 456 millirem if they drank all eight gallons.

19 MR. FITZGERALD: If they drank eight
20 gallons.

21 MR. DARNELL: Okay. So, again,
22 being as conservative as possible, we're not

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1 talking about a dosimetrically significant
2 event here, but it is something that we need to
3 --

4 CHAIR BEACH: I like the fact that
5 they --

6 MR. DARNELL: Eight gallons of water
7 will kill you.

8 CHAIR BEACH: I like the fact that
9 they were looking for Carter ink. It's
10 specific to what kind of ink that they were
11 going to write on the bottles with.

12 MR. FITZGERALD: They were very,
13 very explicit by what they --

14 CHAIR BEACH: Yes.

15 MR. DARNELL: I think that once we
16 get the weeklies, we'll be able to track this
17 down very easily.

18 MR. FITZGERALD: Oh, boy. And then
19 we'll --

20 MR. DARNELL: Jim, you look like you
21 have a question.

22 MEMBER LOCKEY: No, no, I'm just --

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1 I was just going to say they sell them in the
2 gift shop, but --

3 (Laughter.)

4 CHAIR BEACH: When they were
5 purchasing, they were getting the water from
6 Sandia. So, it would be interesting that they
7 were actually -- because Sandia was selling
8 them the water. So, I wouldn't think it was
9 going to Sandia.

10 They were selling it back. See, it
11 doesn't make sense in that -- in those terms.

12 MR. DARNELL: Yes, you're right.

13 MEMBER POSTON: When I was at ORNL,
14 there was some guy who came up with an idea and
15 actually manufactured little key chains like
16 this where they embedded in plastic a small,
17 stainless steel disk that was covered with a
18 small amount of uranium-235.

19 CHAIR BEACH: What year was that?

20 MEMBER POSTON: I don't remember,
21 but I have one.

22 MEMBER LOCKEY: I wouldn't be

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1 surprised.

2 CHAIR BEACH: Of course you do.

3 MEMBER POSTON: I do. And it
4 actually -- there was so much helium gas
5 generated that it blew the top off of it.

6 (Laughter.)

7 (Simultaneous speaking.)

8 CHAIR BEACH: Okay. So, that takes
9 us through the --

10 MR. FITZGERALD: We have the SEC
11 coming up. Thought I'd throw that in.

12 MEMBER POSTON: Well, I was there for
13 13 years. I can't tell you, but my -- had a
14 friend lived across the street who was in public
15 relations. And he came across the street and
16 gave me one. I said, okay.

17 CHAIR BEACH: So, we're finished
18 with the issues matrix items. I did want to
19 give -- Maurice, did you have --

20 (Simultaneous speaking.)

21 MEMBER CLAWSON: I've kind of sat
22 back. I want to understand more about TBD-6000

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1 and understand how we're using this. Because
2 my understanding was, was TBD-6000 was designed
3 for uranium facilities only and the process of
4 that.

5 And I can understand why we are
6 using it for this one part of it, but the issue
7 that I have is if there are any other operations
8 going on during that time period that are
9 different than that, to me it looks like a
10 severe problem.

11 MR. McCLOSKEY: Well, one use of
12 TBD-6000 for the mag-thorium machining ops, we
13 just use the methodology or the ratioing of what
14 amount of exposure a supervisor would get in
15 relationship to an operator.

16 We think that that
17 operator/supervisor-type ratio holds up with
18 most machining-type operations including with
19 mag-thorium.

20 And so, that's the only way we use
21 TBD-6000 for thorium.

22 MEMBER CLAWSON: Okay.

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1 MR. McCLOSKEY: If that's your
2 question.

3 MEMBER CLAWSON: That's part of it.
4 And then the other question is if we are using
5 it for the other people in the earlier years.

6 It's we're using TBD-6000 --

7 DR. NETON: Just the uranium
8 operations.

9 MEMBER CLAWSON: Okay. But if we
10 have any other operations going on at the same
11 time as that --

12 DR. NETON: Such as?

13 MEMBER CLAWSON: What?

14 DR. NETON: I don't know what other
15 operations were going on at the same time.

16 MEMBER CLAWSON: Well, and see this
17 is --

18 MR. McCLOSKEY: Like non-rad
19 operations.

20 MEMBER CLAWSON: Well, no. If we
21 had any, you know, we're machining the plugs for
22 something else, but we still have operations

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1 going on in the facility that I believe that
2 were radioactive parts and pieces that were
3 going for other things.

4 MR. DARNELL: Like what?

5 MEMBER CLAWSON: Well, they were
6 into the weapons complex already then, okay.
7 They were using -- they were building parts for
8 the weapons.

9 And as we've seen earlier, you know,
10 I just want to make sure because I keep hearing
11 -- one of the things they throw out is that, you
12 know, well, the Board approved TBD-6000. Why
13 do you have a problem with it?

14 When I approved TBD-6000, it was
15 very cut and dry what we used it for. Now, all
16 of a sudden it seems like it is branching out
17 and growing leaves and growing --

18 DR. NETON: But, Brad, it's not. I
19 mean, it's a lathing operation that we're
20 applying it to just like what's used in Kingsley
21 and Harris.

22 MEMBER CLAWSON: And I understand

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1 that, Jim, but if through our work here we see
2 another process that is going on during that
3 time period, it's --

4 DR. NETON: Well, all bets are off
5 then.

6 MEMBER CLAWSON: Right. I just -- I
7 want to make sure that --

8 DR. NETON: It's still applicable to
9 that operation.

10 MEMBER CLAWSON: It is and I want to
11 make this clear. I have no problems with that,
12 but I don't think that that was the only thing
13 going on.

14 DR. NETON: Well, the other piece of
15 the puzzle is that we do have apparently some
16 bioassay data for that time period.

17 MR. DARNELL: We think we do.

18 DR. NETON: We think we do.

19 MEMBER CLAWSON: Right.

20 DR. NETON: If we can get it out of
21 these medical records for \$70,000.

22 CHAIR BEACH: Yes.

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1 MR. McCLOSKEY: You said you didn't
2 know what other operations could have been
3 going on at the time, but we didn't even know
4 about the U-nat machining until we started this
5 process and we discovered that.

6 MEMBER CLAWSON: Right.

7 MR. McCLOSKEY: And so, I mean, we're
8 looking hard for any --

9 MEMBER CLAWSON: And I'm not saying
10 you aren't. I just -- I just want to make sure
11 that we keep in mind what TBD-6000 was designed
12 for.

13 And I have no problems with us using
14 it for that portion of it. But when all of a
15 sudden other processes start, you know, come
16 into that, I just -- that's an issue.

17 MR. DARNELL: I think we all agree
18 with you there.

19 DR. NETON: And the other piece of
20 the issue that I think we need to demonstrate,
21 it's not automatic TBD-6000 that can be used.
22 We need to demonstrate the conditions that were

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1 there are comparable and match up with what --

2 MR. DARNELL: I think John --

3 CHAIR BEACH: Yes.

4 MR. FITZGERALD: Yes, that was --
5 really the task was to very early on -- in fact
6 I think that was the first thing started -- we
7 went to John because he had spent so much time
8 with 6000 and said walk it down from A to Z and
9 make sure that it applies all the way across and
10 all the factors are considered.

11 And I think we did look on the
12 natural uranium and did not see any other source
13 terms that would be a problem. That was a part
14 of also looking at -- now, thorium we mentioned
15 that we still have a question mark. Just
16 wanted to hammer it, make sure that was the case
17 with thorium.

18 But other than that, no, I don't
19 think there's any issues on uranium.

20 CHAIR BEACH: Well, and how it
21 applies and to whom it applies, that all has to
22 be addressed. Like John threw something out,

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1 but there's two conversations that need to
2 happen on that.

3 DR. NETON: Yes, I think that sort of
4 falls in the category of example dose
5 reconstructions and how we would treat
6 different classes of workers, that sort of
7 thing.

8 CHAIR BEACH: Yes.

9 MR. DARNELL: And I think a lot of
10 what John said validated what we've put in the
11 ER to the point of saying that we were
12 conservative with our estimations.

13 But as Brad has pointed out, you
14 know, if anything changes along the way, we have
15 to change what we've done so far and we're
16 continuing to look.

17 CHAIR BEACH: Thanks for pointing
18 that out and -- anything else?

19 DR. MAURO: This is John. I'm sorry
20 to interrupt. I heard mention that TBD-6000
21 was used at some later time period and I have
22 to say that I did not look at any later time

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1 period.

2 CHAIR BEACH: No. No, no.

3 MR. FITZGERALD: No, no.

4 CHAIR BEACH: No, John.

5 MEMBER CLAWSON: No, John, that may
6 have been me saying it wrong. I just wanted to
7 clarify what my interpretation of what TBD-6000
8 was designed for, what it was used for.

9 And if other -- during that
10 machining process if something else came in
11 there that, you know, this was a problem for me,
12 I just wanted to make sure and go on the record
13 as stating that.

14 DR. MAURO: Okay, thank you.

15 MEMBER CLAWSON: Thanks, John.

16 CHAIR BEACH: So, for the next hour
17 or so I want to go ahead and give the petitioners
18 a chance to talk to this last section. And then
19 talk about path forward here and you should
20 still be out of here by 3:30 at that point since
21 we're right at 2:30.

22 Maurice, do you have anything that

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1 you would like to add? Anything new to this
2 last topic that we've been discussing?

3 MR. COPELAND: Well, for the last
4 topic --

5 CHAIR BEACH: Can you come up to the
6 table again? Thank you.

7 MR. COPELAND: Probably what I'm
8 going to relate to you is something that you can
9 think about --

10 CHAIR BEACH: Okay.

11 MR. COPELAND: -- when you're
12 analyzing certain things. I hear that there's
13 a problem with the connection of an exposure of
14 a supervisor and the worker on certain bounds.

15 And I have that experience myself.
16 And it's kind of rare. I filed a claim and
17 formaldehyde was one of my -- was what I was
18 considering as an exposure.

19 Well, they told me that the
20 likelihood of me being overexposed to
21 formaldehyde was not likely because I was a
22 supervisor, but the workers, you know, would

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1 get different consideration.

2 Now, the workers that they were
3 talking about of course were the tool and die
4 makers and the model makers and it would be
5 machinists too because of the phenolic.
6 Phenolic is a formaldehyde base.

7 They didn't take in consideration I
8 was a machinist for 19 years and I was a tool
9 and die maker and a model maker for eight years.
10 So, how could you exclude me just because I was
11 a supervisor when I filed my claim?

12 So, you all, you know, that can help
13 you think about a person's work record and work
14 history.

15 CHAIR BEACH: Sure. Yes, and I
16 think that was brought up earlier --

17 MR. COPELAND: Yes.

18 CHAIR BEACH: -- during that very
19 first topic we were talking about this morning.

20 MR. COPELAND: Okay.

21 MR. DARNELL: Generally, though,
22 when we do a dose reconstruction --

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1 MR. COPELAND: I'm sorry?

2 MR. DARNELL: Generally when we do a
3 dose reconstruction for a person like you which
4 had supervisory experience, machinist
5 experience and so on, we'll apply the worst
6 case.

7 So, if your worst case dose
8 potential was as a machinist, from a radiation
9 standpoint you get the dose from a machinist,
10 not the dose from the supervisor.

11 MR. COPELAND: Okay. Okay.
12 Another thing, the waste handlers, the people
13 that handled the waste, in your investigation
14 I hope you notice that in the '90s waste
15 management was completely re-manned.

16 Now, you got to realize people
17 handled -- the people that were in that job
18 handled that job in waste management for 20, 30
19 years and all of them were taken out of that job
20 and re-manned by other employees, some new
21 employees.

22 And the reason that they did that

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1 was they found out that these people could not
2 read.

3 Now, how did they protect these
4 people all of these years that they were in that
5 job and then when HAZMAT, HAZWOPER training and
6 all the certification came along, they gave
7 these people a test and they found out that
8 these people could not read.

9 Now, I think that's very
10 embarrassing for the industry, I think it's
11 very embarrassing for the plant, but that ought
12 to go into the consideration as to how good did
13 they protect the people, how much were they
14 trained.

15 If those people were trained, they
16 should have found out that they couldn't read
17 long before that dealing with the hazardous
18 waste and all the waste. So, consider that,
19 too.

20 MR. McCLOSKEY: Was that a large
21 number of people that --

22 MR. COPELAND: Oh, yes. Of course.

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1 and like I said, these are long-term employees.

2 CHAIR BEACH: That was in the early
3 '90s, you said?

4 MR. COPELAND: Yes, it was in the
5 '90s. And you ought to be able to really get
6 a good feel on that because they started a
7 vanilla reading program and put people through
8 the reading program and they had testimonials
9 after they completed the reading program.

10 MR. McCLOSKEY: KCP conducted that?

11 MR. COPELAND: Yes. Yes. So, you
12 know, that -- and I think that would kind of
13 reflect on actually just how much the employees
14 knew about what they were doing. And because
15 we indoctrinated that the less you know, the
16 better off you are.

17 So, that's really all I have to say
18 about the last portion.

19 MEMBER CLAWSON: Maurice, I wanted
20 to ask you one question because I found it
21 interesting. When you talk about the model
22 shop, could you explain what the model shop

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1 actually did?

2 MR. COPELAND: The model shop, we are
3 just that. We build the models. We build the
4 prototypes. We build the first part. We take
5 it through design to production.

6 We build the jigs, the fixtures,
7 everything to produce the part. Now, these are
8 not -- these are not permanent fixtures or
9 permanent jigs.

10 The tool room builds the permanent
11 production jigs, but we go through -- we start
12 the work on a napkin. Engineers come down and
13 we go through the development of the product,
14 of the parts.

15 Another thing that we do that --
16 this should be very important to the SEC. I've
17 termed it autopsies. We did autopsies.

18 We would get a unit in from Pantex,
19 wherever, and some -- we might recover -- we
20 could have an assembly unit and we may want to
21 recover a unit out of assembly, but they don't
22 want to take it all apart.

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1 Well, we will locate it, locate
2 where the unit is and go in, we'll cut out a hole
3 or something to get the access -- to access the
4 part and bring it out.

5 Now, it was rumors and we know that
6 sometimes they will come back and they will say,
7 well, this thing was contaminated. And that's
8 all we would ever hear about that the unit was
9 contaminated. That's all we hear.

10 Contained with what? I don't know,
11 but I know that some of the units came from
12 Pantex. They might have come just from some
13 engineer at Sandia or some engineer somewhere
14 out there that wants something.

15 CHAIR BEACH: This is part of our
16 interview notes, too, from the last visit to
17 Kansas City just because you discussed this at
18 that time, too.

19 MR. COPELAND: Yes.

20 CHAIR BEACH: In case somebody wants
21 to look at those notes.

22 MR. COPELAND: Yes, and a lot of

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1 those -- a lot of those remnants, you know, was
2 -- I call them "scary" now. I didn't call them
3 "scary" then, because some of that stuff would
4 -- some of these things would ooze out fluids,
5 green fluids, you know, and it would mix in with
6 the coolants that we didn't use because we can't
7 use coolant, but the machine had coolants in it.
8 And when it oozes it, it's in the machine, you
9 know, go down in the machine.

10 We wouldn't be using coolants at the
11 time, but it would go down in there and that
12 stuff would stay there, because we're not going
13 to change the coolant just because something
14 oozed out of it, you know, but we would get back
15 words a lot of times that the units were
16 contaminated.

17 MR. McCLOSKEY: So, the model shop
18 does a lot of this prototype work and then they
19 could also assign jobs where they cut open and
20 --

21 MR. COPELAND: Oh, yes.

22 MR. McCLOSKEY: -- do autopsies.

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1 MR. COPELAND: Yes, we did -- that's
2 what I call them. Autopsies, you know.
3 Recovering units. Recovering -- and we did a
4 lot of destruction.

5 I gave you a name of a guy named
6 [identifying information redacted]. And that
7 was the one with the tritium.

8 They wouldn't tell me what the units
9 were contaminated with. [Identifying
10 information redacted] was the ES&H guy on the
11 job. [Identifying information redacted] was
12 the guy that came in from Rocky Flats and he went
13 to work for ES&H.

14 I had a guy that gets sick which I
15 didn't -- it didn't relate as far as I'm
16 concerned to the job, but they wanted to talk
17 to him, but he was in the hospital.

18 I told them he was in the hospital.
19 And they said, well, when he comes back, we want
20 to talk to him.

21 Okay. He came back. [Identifying
22 information redacted] and about four or five

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1 other people came up. [Identifying
2 information redacted] was talking to him.
3 Other people were looking around just observing
4 him.

5 And I wanted to know after watching
6 this, I wanted to know what was the source of
7 contamination, you know.

8 I work with him. I set the job up.
9 I'm the one that we adjust them down with the
10 face mask that eventually they said you didn't
11 need to wear it and we were destroying these
12 parts. We were still in the destruction.

13 We destroyed configurations. So,
14 it was a classified job. Okay. Well, they
15 wouldn't tell me what it was, what the source
16 of contamination was.

17 I was pretty upset about that and I
18 was looking over their shoulder. This one guy
19 sitting back at the desk and he was the one
20 writing on a piece of paper. And I looked over
21 his shoulder and I know doggone well I saw
22 "tritium" on that paper.

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1 There was about five -- five
2 different substances and I know -- I know I saw
3 tritium on there and I don't know if that was
4 the source, but I know I saw it.

5 MR. McCLOSKEY: So, you were
6 destroying a lot of these pieces?

7 MR. COPELAND: Oh, yes.

8 MR. McCLOSKEY: And in what way were
9 you destroying them? Were you cutting them
10 with --

11 MR. COPELAND: Cutting them up.

12 MR. McCLOSKEY: Under the saw, okay.

13 MR. COPELAND: Cutting them up on the
14 machine. On a lathe.

15 MR. McCLOSKEY: Just so you couldn't
16 recognize the classified shape anymore.

17 MR. COPELAND: Right. And we did a
18 lot of that.

19 CHAIR BEACH: What time period was
20 that; do you remember?

21 MR. COPELAND: That was in the -- was
22 in the '90s.

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1 CHAIR BEACH: Okay.

2 MR. COPELAND: About the mid-'90s in
3 the model shop.

4 MEMBER CLAWSON: And I'll let you
5 understand why I asked, Maurice will be able to
6 tell us this, is because when I think of the
7 model shop, I think of something harmless, you
8 know, putting little stuff together.

9 But the whole process of this and
10 what I found interesting in Kansas City was they
11 received everything back from be it Pantex, be
12 it wherever. These parts came back to them.

13 It was part of their QA program to
14 be able to go through these after they had been
15 on the line for so long like that. They were
16 continuously making improvements to it. They
17 were seeing different wear process and
18 everything else like that.

19 To get to a lot of these parts, they
20 came back as -- what can I say? They came back
21 as one big part and they had to cut these out
22 of there.

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1 So, you have a lot of other things
2 coming back with these potentially. And I just
3 wanted to make sure that we understood that when
4 I thought of model shop, I was totally thinking
5 of something different until I got in and
6 started finding out what the whole process was.

7 Because this was the beginning of it
8 to basically bringing everything all back and
9 seeing how it did sitting out there for 10, 20
10 years. And that's -- I just wanted to make sure
11 that all of us understood what --

12 MR. McCLOSKEY: The model shop was
13 also where we say in the ER that the mag-thorium
14 machining, most of the mag-thorium machining
15 occurred from '57 to '75. So, that's the space
16 for that.

17 MR. COPELAND: Yes, we prove in -- we
18 prove in everything for production. We prove
19 it in from our fixtures, our jigs. When it goes
20 into production, ours is not permanent. Like
21 I said, the tool room does the permanent stuff.
22 It's design-build in the model shop once we get

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1 it all.

2 And we build the first part. We
3 also build the first part from the fixtures and
4 the jigs and it goes to the design agency where
5 --

6 MR. PORROVECCHIO: Yes, this is Joe
7 Porrovecchio. I have two questions, Maurice.

8 MR. COPELAND: Yes.

9 MR. PORROVECCHIO: One question is
10 when you destructively accessed some parts, was
11 that the entire unit like the reentry heat
12 shield that you'd have to cut through?

13 MR. COPELAND: Did you say the entire
14 part? Yes, it would be -- well, we are just --
15 if it was the configuration that they wanted to
16 remove, that's how we would remove it.

17 MR. PORROVECCHIO: Uh-huh.

18 MR. COPELAND: Okay.

19 MR. PORROVECCHIO: Okay. And the
20 second question is, do you have any samples or
21 relics that may be analyzed or looked at by the
22 Work Group?

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1 MR. COPELAND: No. No, that stuff
2 is --

3 MR. McCLOSKEY: It never left the
4 site, Joe.

5 MR. COPELAND: No, no, no.

6 (Simultaneous speaking.)

7 MR. COPELAND: I wish I did. I wish
8 I did.

9 (Simultaneous speaking.)

10 CHAIR BEACH: Maurice, do you have
11 anything else for us?

12 MR. COPELAND: No.

13 CHAIR BEACH: Okay. Thank you very
14 much for your comments.

15 MR. KNOX: I will be short.

16 CHAIR BEACH: Okay.

17 MR. KNOX: And it's just I'm sitting
18 back here thinking about the good old days in
19 the '60s when I was a young Air Force officer
20 and radiation physicist in foreign technology.

21 Our job was to prevent a
22 technological surprise. And we can, shall I

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1 say, collected things.

2 And it looks like to me and I don't
3 know this for sure, and I can speak to it because
4 I only look at the foreign side of the coin, but
5 it looks like the Kansas City Plant was set up
6 as a special repository for material that was
7 collected and needed to be worked on and
8 flipped, that technology could be flipped into
9 our industry.

10 It's interesting that it was
11 classified as a non-nuclear facility, which is
12 one of the normal plausible deniability
13 schemes.

14 If you look at the materials that
15 they think that facility had, it had the
16 materials and capabilities to build and test
17 atomic bombs. Think about it.

18 It had tritium, you know. They use
19 that tritium to provide a little more oomph to
20 the bomb, right?

21 Think about Teapot and --

22 MR. DARNELL: Those are topics that

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1 are getting onto things that we cannot discuss
2 in this meeting.

3 MR. KNOX: I don't know about it
4 though. I'm just speculating. I only worked
5 foreign side of the whole house.

6 MR. DARNELL: I'm letting you know,
7 sir --

8 MR. KNOX: But it still represents
9 exposure to the workers and that's what we're
10 talking about. You don't want to talk about
11 those things.

12 CHAIR BEACH: Let me tell you what we
13 want to talk about is specific to Kansas City
14 during --

15 MR. KNOX: That's what I'm talking
16 about. Specific to Kansas City.

17 CHAIR BEACH: Okay, but that is
18 outside the realm of the topics that we've
19 discussed today.

20 MR. KNOX: Okay. Okay. I thought
21 we were about exposure -- let's move on then.
22 You're talking about thorium oxide exposure.

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1 As I recall when they use that stuff
2 to make U-233, you have the high-ingrowth of
3 gamma -- high gamma emitters, didn't you?

4 MR. DARNELL: 232, yes.

5 MR. KNOX: So, I don't know if that's
6 taken into consideration here.

7 MR. DARNELL: The thorium oxide
8 powder at this site, all the information we have
9 on that is that it was used as a laboratory
10 standard.

11 So, there was not a dose
12 significance to the general population of the
13 plant from that thorium oxide powder.

14 MR. KNOX: Yes, but where did you get
15 the U-233 from?

16 MR. DARNELL: We did not get the
17 U-233.

18 MR. KNOX: It says it here.

19 MR. DARNELL: I don't know where
20 this document came from.

21 MR. KNOX: That came from the Site
22 Exposure Matrix. And the Site Exposure Matrix

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1 is supposed to represent materials that were
2 found at the plant.

3 This sheet here from the Site
4 Exposure Matrix said that you have the metal.
5 Do you know what the metal -- the metal was the
6 fuel. That's what it was called.

7 You have a lot of -- you have things
8 that -- like stable alloy and I think -- I'm not
9 sure, but some other organization developed
10 that because they were testing a lot of metals
11 in -- metal alloys.

12 Were you guys here testing all of
13 these metal alloys, or were you a repository for
14 a lot of these metal alloys that were being
15 tested associated with the development of the
16 atomic bomb? Because it would have
17 represented a significant exposure given that
18 you did not have any health physicists.

19 And that is the most interesting
20 part of this whole thing is that you have all
21 of these radioactive materials and you did not
22 have health physicists. You classified the

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1 facility as a non-nuclear facility. Plausible
2 deniability.

3 Because if I don't have anyone
4 training in the detection of this material, it
5 never happened.

6 CHAIR BEACH: Okay.

7 MR. KNOX: Now, the other issues --

8 MR. DARNELL: Before you move on to
9 the next issue, I'm looking at the Department
10 of Labor's Site Exposure Matrix for the Kansas
11 City Plant. None of this is included.

12 MR. KNOX: It is.

13 MR. DARNELL: So, where did you get
14 this?

15 MR. KNOX: From the Kansas City Site
16 Exposure --

17 MR. DARNELL: I'm looking at it right
18 now at the Site Exposure Matrix.

19 MR. KNOX: Well, I copied this from
20 it. Now, the only difference is that I went
21 down and put in special nuclear materials and
22 identified it. I highlighted the metal and

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1 said the metal was called reactive fuel.

2 CHAIR BEACH: Wayne, do you have the
3 source document with you for that?

4 MR. KNOX: I do not have the source
5 document, but I will give you the source
6 document.

7 MR. DARNELL: The SEM lists
8 promethium, but only promethium. No cask
9 number, no aliases, nothing.

10 It lists thorium. None of the
11 other information that you have listed. It
12 lists uranium. None of that other information
13 that you have listed.

14 MR. KNOX: I will get you that. You
15 might have taken it out, but I do have the
16 original copy that I copied from the Site
17 Exposure Matrix.

18 Now, we know that you have metal
19 because if you look at the Mallinckrodt, you've
20 got --

21 MR. DARNELL: We're not discussing
22 Mallinckrodt here.

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1 MR. KNOX: Mallinckrodt defines you,
2 that is the Kansas City Plant, as a metal
3 handling facility.

4 If you look at TIB triple four,
5 Bendix, Pioneer who operated this facility, was
6 defined as a metal handling facility, right?

7 I think, Neton, you approved that.

8 DR. NETON: Yes.

9 MR. KNOX: Yes. So, it wasn't --

10 DR. NETON: There's uranium all over
11 the Kansas City Plant, absolutely. That's
12 what we're talking about.

13 MR. KNOX: Yes, and that it was
14 shipped. It was shipped from Mallinckrodt,
15 right?

16 DR. NETON: I believe some of it
17 might have come from Mallinckrodt. Some might
18 --

19 MR. KNOX: Okay.

20 DR. NETON: I think some of the slug
21 came from Bethlehem Steel, actually.

22 MR. KNOX: Okay. Well, what was a

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1 non-nuclear facility doing with the metal which
2 was reactive fuel?

3 DR. NETON: I don't know who called
4 it a non-nuclear facility. Did we call it a
5 non-nuclear facility.

6 MR. KNOX: Yes, it's defined as a --
7 and interestingly enough, which is interesting
8 is, there is no such animal.

9 DR. NETON: Well, isn't there a
10 special definition of nuclear facility,
11 though?

12 (Simultaneous speaking.)

13 DR. NETON: Depends on how much
14 material is present. They define quantities.

15 MR. KNOX: It's in 820. 820 defines
16 --

17 DR. NETON: It's quite possible to --
18 (Simultaneous speaking.)

19 CHAIR BEACH: The quantities.

20 DR. NETON: Quantity of material.

21 CHAIR BEACH: Yes.

22 MR. DARNELL: See, one of the things

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1 that goes into the definition of a site as
2 non-nuclear it's part of the weapons complex,
3 but they don't do any of the nuclear materials
4 for the weapon at this site.

5 MR. KNOX: What? How can you say
6 that?

7 MR. DARNELL: Because it's the
8 truth, Mr. Knox.

9 MR. KNOX: Why would you have all of
10 this -- I even saw --

11 MR. DARNELL: Again, this document
12 appears fallacious when I look at the Site
13 Exposure Matrix right now.

14 MR. KNOX: Okay.

15 MR. DARNELL: So, I can't speak to
16 this. We can't use this.

17 MR. KNOX: Okay. Well, can you tell
18 me why then from Mallinckrodt a plausible
19 exposure to -- which was better, in my opinion.
20 I'll get it right here. Mallinckrodt. Here.

21 Mallinckrodt in 2006, did really
22 what they were doing with TBD-6000, right?

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1 Neton, you approved it.

2 DR. NETON: I approved TBD-6000.

3 MR. KNOX: No, I'm talking about you
4 approved TBD-0004. Your name is on it.

5 DR. NETON: Okay.

6 MR. KNOX: Okay. And in that
7 document it specifically designates Bendix as
8 a metal handling facility.

9 MR. DARNELL: Which Bendix facility?

10 MR. KNOX: The Pioneer division.

11 MR. DARNELL: Pioneer division?
12 The one in Detroit?

13 MR. KNOX: No, the one in Detroit --
14 you told me that they got the metal --

15 DR. NETON: Well, there's no
16 argument that metal was handled at Kansas City
17 Plant.

18 MR. KNOX: Okay, but the metal --

19 DR. NETON: I'll agree to that.

20 MR. KNOX: -- was weapons grade.

21 (Simultaneous speaking.)

22 DR. NETON: It was natural uranium

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1 that came from Lackawanna plant and Bethlehem
2 Steel.

3 MR. KNOX: You're telling me that the
4 metal -- get this on the record. You're
5 telling me the metal was -- say that again.

6 DR. NETON: The slugs, I believe,
7 were natural uranium.

8 MR. KNOX: Natural uranium slugs.

9 DR. NETON: Yes, that were going to
10 Hanford to be put in the reactor.

11 MR. KNOX: Uh-huh, okay. Now, the
12 -- if you are looking for perhaps the forerunner
13 of TBD-6000, it was this document here.

14 MR. DARNELL: What document is that?

15 MR. KNOX: This is the one that he
16 approved.

17 MR. DARNELL: What is the name of the
18 document?

19 MR. KNOX: It is the estimation
20 estimating maximum plausible doses to workers
21 at atomic --

22 DR. NETON: TIB-0004.

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1 MR. KNOX: Yes.

2 DR. NETON: Okay.

3 MR. KNOX: That is sort of the
4 equivalent to 6000.

5 DR. NETON: Well, not exactly.
6 That's --

7 MR. KNOX: I know it's not exactly,
8 but I'm saying it was -- it has all of the
9 radiation doses. It does in my opinion, a lot
10 more than 6000 does.

11 CHAIR BEACH: Okay.

12 MR. KATZ: Where is this going?

13 CHAIR BEACH: Yes. Wayne, we are
14 not citing that document for Kansas City. That
15 document is not being used as far as I know at
16 Kansas City.

17 MR. KNOX: It's not being used at
18 Kansas City, but they indicate in this document
19 that Bendix Aviation, they ship material to
20 here. And they indicated it could be a uranium
21 handling facility.

22 CHAIR BEACH: Okay.

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1 MR. KNOX: Right?

2 DR. NETON: It handled uranium. We
3 agree with that.

4 MR. KNOX: Okay.

5 DR. NETON: Natural uranium.

6 MR. KNOX: Mallinckrodt didn't ship
7 out this natural uranium.

8 CHAIR BEACH: But what's your point?

9 MR. KNOX: The point is that we have
10 all of these radioactive -- you have all of
11 these special nuclear materials here at the
12 Kansas City Plant.

13 MR. DARNELL: There is no special
14 nuclear material at Kansas City Plant. There
15 never has been. We looked on the secure
16 databases to make sure of that.

17 Okay. Again, we've told you this
18 time and time again. And time and time again
19 you bring it back up.

20 There are no special nuclear
21 materials. There have not been special
22 nuclear materials.

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1 MR. KNOX: What's plutonium-239?

2 MR. DARNELL: Not present. That's
3 what it is.

4 MR. KNOX: But it was there. You
5 have sources.

6 MR. DARNELL: It was not present as
7 an exposure source to the general workforce.
8 It was there as --

9 MR. KNOX: What?

10 MR. DARNELL: It was there as a
11 neutron source for the workers that did the
12 neutron work.

13 It was not spread throughout the
14 plant. It's not an exposure potential for
15 every Tom, Dick and Harry that worked in human
16 resources. It's not around the plant. It's
17 in a very specific use.

18 MR. KNOX: Neutrons without proper
19 shielding.

20 MR. DARNELL: Without proper
21 shielding.

22 MR. KNOX: Yes. You're spreading

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1 neutrons around without proper shielding.

2 MR. DARNELL: We don't have any
3 indication of that. Do you have the source
4 document to show where you're coming from with
5 that, because we would like to see it and
6 incorporate it into our dose estimates if you
7 --

8 MR. KNOX: That's what I had asked
9 you for.

10 MR. DARNELL: We don't have that.

11 MR. KNOX: Provide the shielding
12 design studies which is expected based upon
13 NCRP 49, for all of those sources.

14 MR. DARNELL: We've addressed this
15 with you before also. Those go back to the
16 manufacturer of the source.

17 If you want to get the shielding
18 calculations, the shielding design and all that
19 for those sources, you have to go back to the
20 manufacturer.

21 MR. KNOX: But, no, you don't
22 understand. Whenever you bring a source in,

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1 you have to perform a shielding design study.
2 It has the amount of time people are expected
3 to be in the area.

4 MEMBER POSTON: No. What it has to
5 be is in an appropriate shield that has been
6 transported in. The dose from the largest
7 plutonic source that ever was made was 40
8 curies. And the output of that source is about
9 10 the ninth neutrons per second. Doesn't
10 present an extremely large field by itself.

11 Through calculation, you will find
12 out how little the dose is from a 40-curie
13 plutonium source.

14 MR. KNOX: A neutron. A PuBe
15 source.

16 MEMBER POSTON: Yes, a PuBe source.

17 MR. KNOX: You're telling me a
18 40-curie PuBe source --

19 MEMBER POSTON: Has an emission rate
20 of about 10 to the ninth neutrons per second.

21 MR. KNOX: Uh-huh.

22 MEMBER POSTON: And I'm telling you

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1 that's not a significant dose rate when you r
2 square it -- Four pi r square it from the source.

3 MR. KNOX: Okay.

4 MEMBER POSTON: So, when it comes in,
5 in the shield that it's shipped in that meets
6 DOT and everybody else's regulations, it's
7 perfectly fine.

8 And you could perfectly fine store
9 it in that container. You don't need to design
10 a room. You don't need to design a shield.
11 It's perfectly fine the way it is.

12 MR. DARNELL: The only thing you
13 actually have to do is when the source is being
14 used, verify there's no radiation area
15 established where people can get into it.
16 That's what they have to do.

17 (Simultaneous speaking.)

18 MR. KNOX: What about the cobalt-60
19 source?

20 MR. DARNELL: Same thing. There's
21 no difference in any of those sources.

22 MR. KNOX: Okay. Well, can you tell

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1 me how (name redacted) managed to get cataracts
2 in both eyes --

3 MR. DARNELL: Act of God. We're not
4 here to decide that court case again.

5 MR. KNOX: But because it was left
6 open. You can't --

7 MR. DARNELL: The court case was
8 decided. It's not part of this.

9 CHAIR BEACH: And it's out of the
10 purview of this Work Group.

11 MR. KNOX: We have -- we have here
12 workplace incidents that (name redacted) was a
13 workplace incident in which she was exposed.

14 CHAIR BEACH: And she --

15 MR. DARNELL: She had her day in
16 court.

17 CHAIR BEACH: She had her day in
18 court and --

19 MR. KNOX: But that exposure, that
20 cobalt-60 source left open would have exposed
21 all of those people that were permanently
22 stationed on the roof tremendously and in

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1 versions there was a scattered radiation all
2 over this site.

3 MR. DARNELL: For what purpose in
4 any universe would somebody permanently
5 station personnel on the roof? Come on.

6 MR. KNOX: People were -- because
7 you had a lot of the HVAC units on the roof and
8 they were constantly maintained. So, you had
9 people that were permanently stationed on the
10 roof at this facility.

11 MR. DARNELL: Again, the sources
12 come in the approved containers and shielding
13 that is done by the manufacturer. If you want
14 that data, go to the manufacturer.

15 The radiation areas are supposed to
16 be established when those sources are used.
17 And they had environmental safety and health
18 people on the site controlling the use of those
19 sources.

20 I did not read fully everything in
21 the (name redacted) case, but that case had its
22 day in court and was decided and is not going

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1 to be done again in this group.

2 MR. KNOX: Decided in terms of
3 radiation exposure --

4 (Simultaneous speaking.)

5 MR. DARNELL: It does not matter.
6 It's done.

7 MR. KNOX: Okay. It's done as far as
8 you're concerned.

9 MR. DARNELL: We have no say in
10 litigation that was done --

11 MR. KNOX: No, I'm talking about you
12 have a say-so in the exposure of people. It has
13 nothing to do with the litigation.

14 The source was left open. She had
15 ended up with cataracts in both eyes. And I'm
16 telling you that that situation would have
17 exposed all of the passive eyes and heavily
18 exposed all of the people on the roof.

19 And you keep saying, well, we have
20 nothing to do with the litigation. I agree.
21 You have something to do with the exposure of
22 people to accidents like this.

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1 MR. DARNELL: We look for the
2 exposure potential that's out there to ensure
3 that we give the appropriate dose to the
4 appropriate personnel.

5 You are stating that because this
6 woman got cataracts, that all these other
7 people could have gotten exposed.

8 Where is all the other cataracts?
9 Where is all the other radiation damage?
10 Where's the people that died in their 30s from
11 all this terrible radiation exposure?

12 It's not there.

13 MR. KNOX: It's not there because you
14 are not acknowledging it. There is a
15 difference between something --

16 DR. NETON: I'm not sure this is
17 accomplishing anything.

18 CHAIR BEACH: It's not.

19 (Simultaneous speaking.)

20 MR. COPELAND: I understand what
21 he's saying. It's not there. Look, these
22 people at that plant when you had that IG

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1 inspection out there, you told me that that that
2 IG inspection was done on the DOE side.

3 It was not. I have it right here.
4 That was not. It was done on the GSA side where
5 they looked for a cancer cluster.

6 MR. DARNELL: DOE did it on the GSA
7 side?

8 MR. COPELAND: It was done where they
9 looked for cancer clusters.

10 DR. NETON: That's the Inspector
11 General.

12 MR. COPELAND: Huh?

13 DR. NETON: That's the Inspector
14 General.

15 MR. DARNELL: There was one done by
16 the Department of Energy, and one done by the
17 Inspector General.

18 MR. COPELAND: Huh?

19 MR. DARNELL: There was one done by
20 the Department of Energy on Kansas City --
21 actually, more than one. And there was an
22 Inspector General report done on the GSA side.

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1 MR. COPELAND: Right.

2 MR. DARNELL: So, you're talking
3 about the GSA.

4 MR. COPELAND: No, I'd love to see
5 the one done by DOE because you said that it's
6 not there.

7 You cannot tell me that they don't
8 have cancer clusters on the DOE side when that
9 whole doggone waste management people, the ones
10 I told you about that couldn't read, look and
11 see where they are.

12 They died within four years of the
13 same cancers. And we've got a lot of examples
14 like that in the model shop and in the tool room.

15 You didn't look for it. You
16 haven't looked for it yet. All we have to do
17 on this whole thing is go ahead and get your --
18 go to Social Security, get your disability
19 retirement records, get your disability
20 retirement records and you'll see cancer
21 clusters.

22 MR. DARNELL: I apologize for this.

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1 I actually have an entire listing of all the
2 cancers associated specifically with the
3 Kansas City Plant.

4 I can't get to my drive to get to it
5 because for some reason it will not allow me to
6 contact, but I will promise you --

7 CHAIR BEACH: It won't let me either.

8 MR. DARNELL: I will promise you I
9 will forward you along that information. It's
10 non-Privacy Act. It's been scrubbed. So, it
11 is something that you can take a look at and you
12 can see all the cancers.

13 It's for 704 individuals and
14 there's, gosh, over 1200 different cancers for
15 704 individuals that were -- that have put in
16 claims.

17 So, I'll be glad to send you that
18 information and let you see it.

19 MR. COPELAND: Send it to me and I'm
20 going to show you --

21 MR. DARNELL: Mr. Knox, would you
22 like a copy?

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1 MR. KNOX: Yes.

2 CHAIR BEACH: Can you send it to Ted
3 and I'll just have him send it to the Work Group.

4 (Simultaneous speaking.)

5 DR. NETON: I'm not sure we're in the
6 business of deciding whether there's cancer
7 clusters at Kansas City.

8 (Speaking over each other.)

9 DR. NETON: We decide whether we can
10 reconstruct doses to the workers that were at
11 the plant and that's our charge.

12 So, getting into this cancer
13 cluster discussion is really not going to serve
14 this group any further.

15 CHAIR BEACH: Thank you.

16 MR. KNOX: But the elephant in the
17 room is --

18 CHAIR BEACH: Okay.

19 MR. KNOX: -- the development of
20 nuclear reactors at --

21 CHAIR BEACH: Okay. Whoa, whoa,
22 whoa. Wait a second.

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1 MR. KNOX: -- that facility.

2 CHAIR BEACH: Let's --

3 MR. KNOX: And we have all of the
4 evidence --

5 CHAIR BEACH: Wayne --

6 MR. KNOX: -- that they were.

7 CHAIR BEACH: Wayne, that topic was
8 brought up at the last interview. I know
9 there's people here that need to leave and we
10 need to finish the Work Group business here in
11 the next 10 minutes. So, I'm going to stop you
12 at the reactor and --

13 MR. KNOX: Okay.

14 CHAIR BEACH: So, path forward. I
15 can't see scheduling another Work Group meeting
16 at this time.

17 We have -- we did discuss briefly at
18 lunch that we -- that Pete Darnell is going to
19 go back to Kansas City on an unrelated issue in
20 August and he's going to try and set up a path
21 forward for another site interview or site data
22 capture sometime in September-October time

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1 frame.

2 So, and I think we should leave it
3 at that until after that data capture before we
4 try to move together on any other Work Groups.

5 There are a couple of White Papers
6 that you can look --

7 MR. DARNELL: Just we're also going
8 to turn on ORAU to go get the data for the weekly
9 reports -- excuse me -- and the SWIMS database.
10 So, that will be concurrent with --

11 CHAIR BEACH: Okay. So, you'll be
12 seeing some documentation. You'll have the
13 two White Papers coming out for 13 and 16.

14 You'll also have interviews from
15 our last interview cycle, that SC&A and NIOSH.
16 Those will be posted in the next couple of
17 months.

18 I think we can just keep moving
19 forward. And after the next data capture,
20 we'll discuss another Work Group meeting.

21 MR. McCLOSKEY: And someone will
22 type this up and there will be a summary of what

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1 we --

2 CHAIR BEACH: Yes, I believe Joe will
3 type it up, send it to NIOSH.

4 MR. FITZGERALD: Yes.

5 CHAIR BEACH: You guys can add your
6 --

7 MR. FITZGERALD: We'll go back and
8 forth to make sure the notes are complete.

9 CHAIR BEACH: I'll check what I have.
10 And then once we're all satisfied, Ted will send
11 it out.

12 MR. KATZ: Yes, or Joe. You just
13 send your draft to everyone, and everyone can
14 --

15 CHAIR BEACH: Add to it.

16 (Simultaneous speaking.)

17 MR. KATZ: The transcripts take a
18 while to get out. So, this is good for action
19 items to get this earlier.

20 MR. DARNELL: Sounds good.

21 MR. KATZ: Transcripts take about
22 30, 35 days.

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1 MR. FITZGERALD: I'll probably just
2 use the matrix and just --

3 MR. DARNELL: Yes.

4 MR. FITZGERALD: -- put a column on
5 the bottom or a bar on the bottom as to the
6 status.

7 CHAIR BEACH: And we'll probably see
8 the matrix updated as well from after this
9 meeting to reflect some of the changes. And
10 SC&A will take care of that.

11 MR. FITZGERALD: Right.

12 CHAIR BEACH: Okay. Any other
13 comments? Then let's go ahead and officially
14 close.

15 MR. KATZ: So, we are adjourned.
16 Thank you, everyone on the phone.

17 (Whereupon, at 3:19 o'clock p.m.
18 the meeting was adjourned.)

19

20

21

22